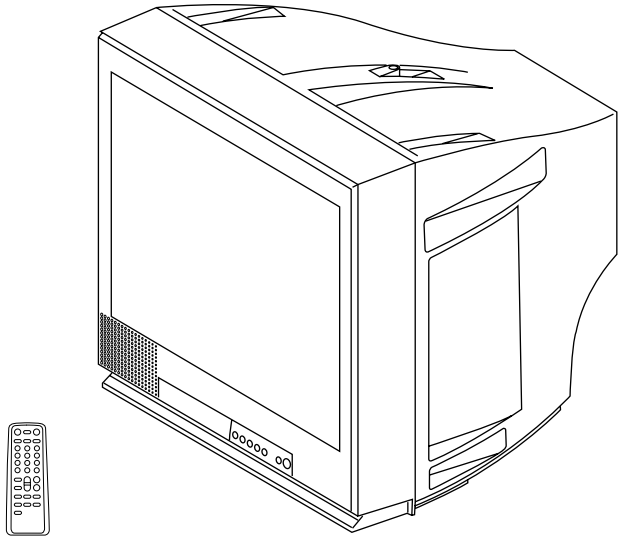
Self Diagnosis Supported model

SERVICE MANUAL

BG-3S CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-PF21L70	RM-952	ME	SCC-U30B-A
KV-PF21M40	RM-952	GE	SCC-U12N-A
KV-PF21M70	RM-952	E	SCC-U13E-A
KV-PF21M70	RM-952	ME	SCC-U30C-A
KV-PF21P10	RM-952	OCE	SCC-U24D-A
KV-PF21P40	RM-952	Singapore	SCC-U29B-A
KV-PF21P40	RM-952	Malaysia	SCC-U21C-A
KV-PF21P41	RM-952	Malaysia	SCC-U21E-A
KV-PF21Q70	RM-952	ME	SCC-U30A-A

WEIXIUZHIJIA 维修之家



MICROFILM

TRINITRON ® COLOR TV

SONY ®

RM-952

SPECIFICATIONS

		Note
Power requirements	110-240 V AC, 50/60 Hz	Except Malaysia and OCE
	220-240V AC, 50/60Hz	For Malaysia and OCE
Power consumption (W)	Indicated on the rear of the TV	
Television system	B/G, I, D/K, M	KV-PF21M40/PF21M70
	B/G	Except KV-PF21M40/PF21M70
Color system	PAL, PAL60, SECAM, NTSC4.43, NTSC3.58	KV-PF21M70 (ME)/ KV-PF21M40/PF21M70(E)
	PAL, PAL60, NTSC4.43, NTSC3.58 (AV IN)	KV-PF21P10/PF21P40/PF21P41
	PAL, PAL60, SECAM, NTSC4.43, NTSC3.58 (AV IN)	KV-PF21L70
	PAL, PAL60, SECAM, NTSC4.43	PF21Q70
Teletext language	English, Arabic, French	KV-PF21P41 only
Channel coverage		
B/G	VHF : E2 to E12/ UHF : E21 to E69/ CATV : S01 to S03, S1 to S41	
	VHF : 0 to 12, 5A, 9A UHF : 28 to 69 CATV : S01 to S03, S1 to S41	Australia only
	VHF : 1 to 11 UHF : 21 to 69 CATV : S01 to S03, S1 to S41	New Zealand only
I	UHF : B21 to B68/ CATV : S01 to S03, S1 to S41	KV-PF21M40/PF21M70
D/K	VHF : C1 to C12, R1 to R12/ UHF : C13 to C57, R21 to R60 CATV: Z1 to Z39, S01 to S03, S1 to S41	KV-PF21M40/PF21M70
M	VHF : A2 to A13/ UHF : A14 to A79/ CATV : A-8 to A-2, A to W+4, W+6 to W+84	KV-PF21M40/PF21M70
(Antenna)	75-ohm external terinal	
Audio output	3W	
Number of terminal		
(Video)	Input : 2 Output : 1 Phono jacks; 1 Vp-p, 75 ohms	
(Audio)	Input : 2 Output : 1 Phono jacks; 500 mVrms	
(Earphone)	Output : 1 Minijack	
Picture tube	21 inch	
Tube size (cm)	54	Measured diagonally
Screen size (cm)	51	Measured diagonally
Dimension (w/h/d, mm)	490 x 458 x 487	
Mass (kg)	25	

Design and specifications are subject to change without notice.

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

TABLE OF CONTENTS

Section	Title	Page
	SELF DIAGNOSIS FUNCTION	4
1.	**GENERAL**	8
2.	**DISASSEMBLY**	
2-1.	Rear Cover Removal	23
2-2.	Chassis Assy Removal	23
2-3.	F Bracket Removal	23
2-4.	Service Position	23
2-5.	Replacement of Parts	24
2-5-1.	Replacement of Control Button	24
2-5-2.	Replacement of Bar Control	24
2-6.	Terminal Bracket Removal	24
2-7.	V1 Board Removal	24
2-8.	Degauss Coil Removal	25
2-9.	Picture Tube Removal	25
3.	**SET-UP ADJUSTMENTS**	
3-1.	Beam Landing	27
3-2.	Convergence	28
3-3.	Focus Adjustment	30
3-4.	G2 (Screen) and White Balance Adjustments	30
4.	**CIRCUIT ADJUSTMENTS**	
4-1.	Adjustments with Commander	31
4-2.	Adjustment Method	32
4-3.	Picture Quality Adjustments	37
4-4.	A Board Adjustment After IC003 (Memory) Replacement	37
4-5.	Picture Distortion Adjustment	38
5.	**DIAGRAMS**	
5-1	Block Diagram	41
5-2	Frame Schematic Diagram	44
5-3	Circuit Boards Location	46
5-4	Schematic Diagrams and Printed Wiring Boards	47
(1)	Schematic Diagram of A(1/2) Board	49
(2)	Scheamtic Diagram of A(2/2) Board	53
(3)	Schematic Diagrams of C3 and F Boards	61
(4)	Schematic Diagram of V1 Board	65
5-5	Semicondutors	68
6.	**EXPLODED VIEW**	
6-1.	Chassis	71
7.	**ELECTRICAL PARTS LIST**	73

SELF DIAGNOSTIC FUNCTION

The units in this manual contain a self-diagnostic function. If an error occurs, the STANDBY/TIMER lamp will automatically begin to flash.
The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY/TIMER lamp flash indicators is listed in the instruction manual for the user's knowledge and reference. If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

1. DIAGNOSTIC TEST INDICATORS

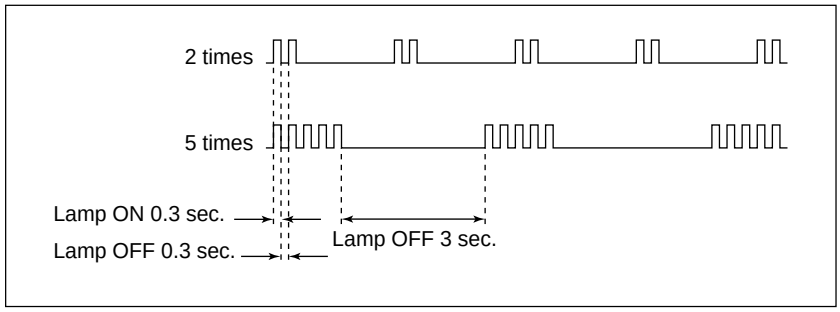
When an errors occurs, the STANDBY/TIMER lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.

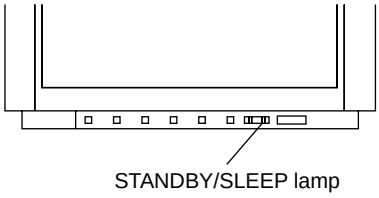
Result for all of the following diagnostic items are displayed on screen. No error has occured if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY/TIMER lamp flashes	Self-diagnostic display/Diagnostic result	Probable Cause Location	Detected Symptoms
• Power does not turn on	Does not light	—	• Power cord is not plugged in. • Fuse is burned out F4601 (F Board)	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
• +B overcurrent (OCP) or overvoltage (OVP) • Vertical deflection stopped • Horizontal deflection overdrive	2 times	002:000 or 002:001~255 003:001~255 004:001~255 at the same time	• H.OUT Q511 is shorted. (A board) • -13V is not supplied. (A board) • IC 503 faulty (A board) • IC 301 faulty (A board)	• Power does not come on. • Load on power line is shorted. • Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Power line is shorted or power supply is stopped.
• White balance failure (no PICTURE)	5 times	005:000 or 005:001~225	• G2 is improperly adjusted. (Note 2) • CRT problem. • IC301 is faulty. (A board) • No connection A board to C3 board.	• No raster is generated. • CRT cathode current detection reference pulse output is small.
• Micro reset	—	101:00 or 101:001~225	• Discharge CRT (C3 Board) • Static discharge • External noise	• Power is shut down shortly, after this return back to normal. • Detect Micro latch up.

Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously.
The symptom that is diagnosed first by the microcontroller is displayed on the screen.
Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

2. DISPLAY OF STANDBY/TIMER LIGHT FLASH COUNT





Diagnostic Item	Flash Count*
+B overcurrent/overvoltage Vertical deflection stopped	2 times
White balance failure	5 times

* One flash count is not used for self-diagnostic.

3. STOPPING THE STANDBY/TIMER FLASH

Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY/TIMER lamp from flashing.

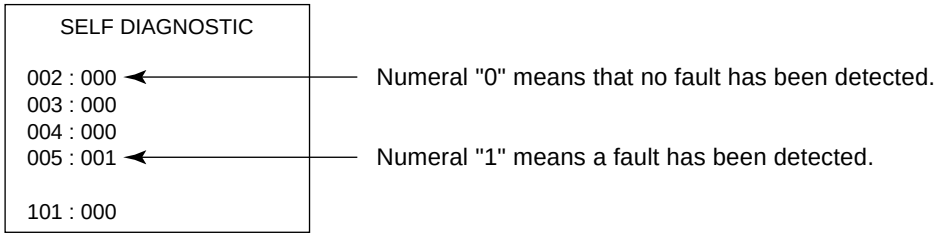
4. SELF-DIAGNOSTIC SCREEN DISPLAY

For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurances of failure for confirmation on the screen:

[To Bring Up Screen Test]
In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display ➡ channel 5 ➡ Sound volume - ➡ Power ON
⇧
Note that this differs from entering the service mode (mode volume +).

Self-Diagnosis screen display


SELF DIAGNOSTIC
002 : 000
003 : 000
004 : 000
005 : 001
101 : 000
Numeral "0" means that no fault has been detected.
Numeral "1" means a fault has been detected.

5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

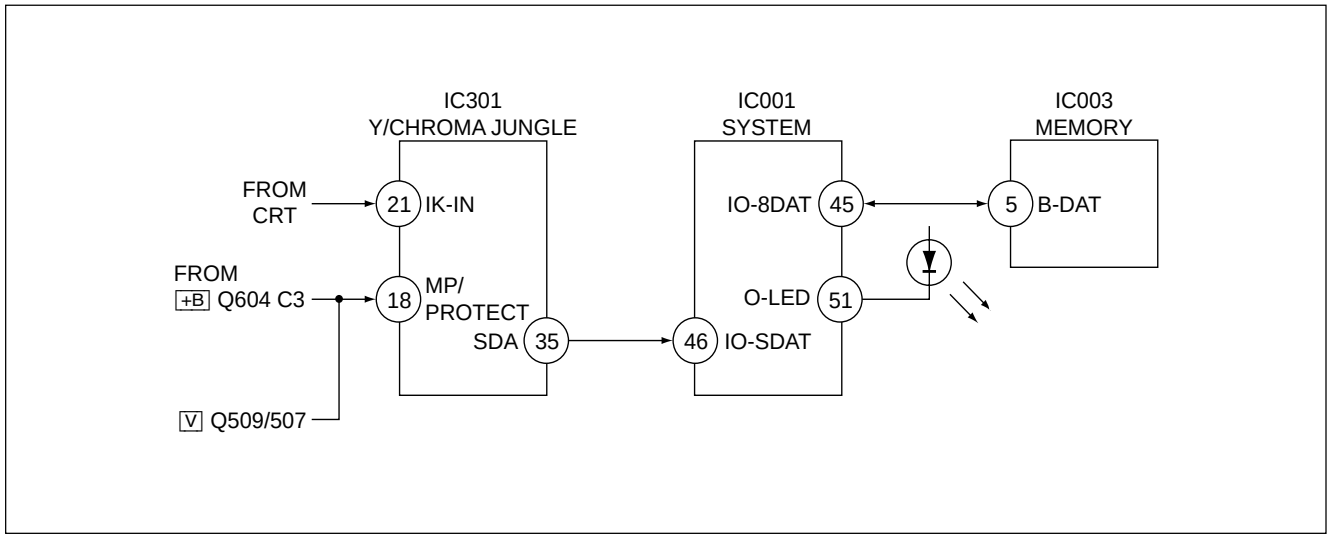
Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]
To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.

Channel 8 ➡ 0

[Quitting Self-diagnostic screen]
To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT



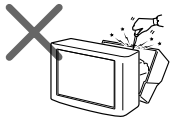
+B overcurrent (OCP)	Occurs when an overcurrent on the +B(135) line is detected by Q604. If Q604 go to ON and the voltage to pin 18 of IC301 should go down when V.SYNC is more than seven verticals in a period, the unit will automatically turn off.
Vertical deflection stopped	Occurs when an absence of the vertical deflection pulse is detected by Q509 and IC001 shut down the power supply.
Vertical deflection overcurrent	Occurs when an overcurrent on V drive line is detected by Q507. Power supply will be shut down when detect this by IC001.
White balance failure	If the RGB levels* do not balance or become low level within 5 seconds, this error will be detected by IC301. TV will stay on, but there will be no picture. * (Refers to the RGB levels of the AKB detection Ref pulse that detects IK.)

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

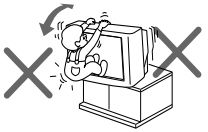
SECTION 1
GENERAL

WARNING

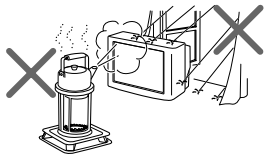
- Dangerously high voltages are present inside the TV.
- TV operating voltage: 110 – 240 V AC. (For Malaysia only: 220 – 240 V AC.)



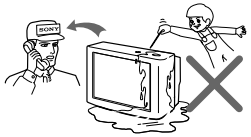
Do not open the cabinet and the rear cover of the TV. Refer servicing to qualified personnel.



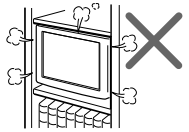
Install the TV in a stable position. Do not allow children to climb onto it.



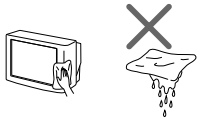
To prevent fire or shock hazard, do not expose the TV to rain or moisture.



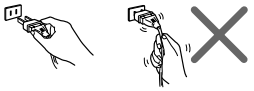
Do not operate the TV if any liquid or solid object falls into it. Have it checked immediately by qualified personnel only.



Do not install the TV in a confined space, such as a bookcase or built-in cabinet.
Do not block the ventilation openings of the TV.

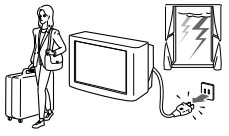


Clean the TV with a dry and soft cloth.
Do not use benzine, thinner, or any other chemicals to clean the TV. Do not scratch the picture tube.

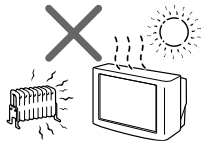


Do not pull the power cord to disconnect the TV. Pull it out by the plug.

Do not plug in too many appliances to the same power socket. Do not damage the power cord.



Disconnect the power cord during lightning storms or if you are not going to use the TV for several days.



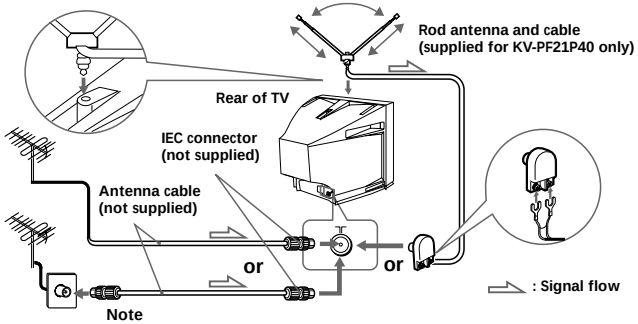
Do not install the TV in hot, humid or excessively dusty places.

Getting Started

Step 1

Connect the antenna (Except KV-PF21P10)

If you wish to connect a VCR, see the "Connecting a VCR" diagram below.

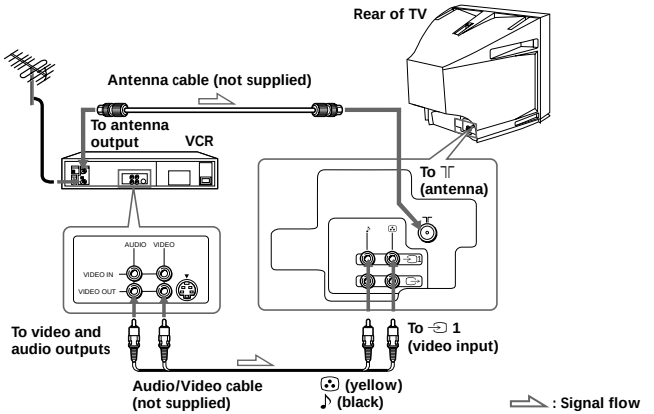


Note

- You are advised to use an outdoor antenna for better reception.

Connecting a VCR

To watch the video, press → 2 (see page 12).

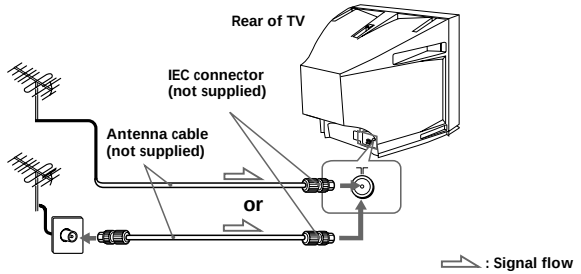


Getting Started

Step 1

Connect the antenna (PF21P10)

If you wish to connect a VCR, see the "Connecting a VCR" diagram below.



Notes

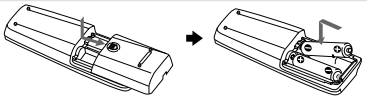
- If you connect a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to ♪ (the black jack).
- If you connect a VCR to the ⅂[(antenna) terminal, preset the signal output from the VCR to the program number 0 on the TV.
- When no signal is input to the connected video equipment, the TV screen becomes blue.

CAUTION

Do not connect the power cord until you have completed making all other connections; otherwise a minimum leakage current might flow through the antenna and other terminals to ground.

Step 2

Insert the batteries into the remote

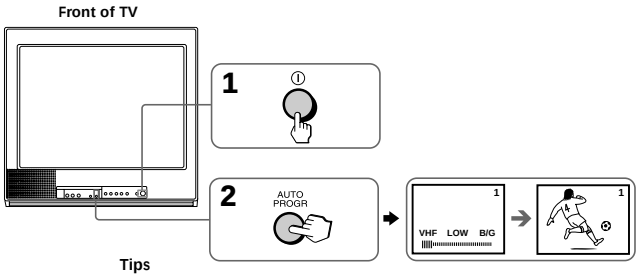


Note

- Do not use old batteries nor use different types of batteries together.

Step 3

Preset the channels automatically



Tips

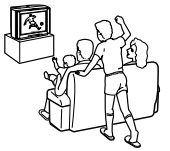
- If you want to stop automatic channel presetting, press SELECT twice.
- If your TV has preset an unwanted channel or cannot preset a particular channel, then preset your TV manually (see page 9).

Note (KV-PF21M40/PF21M70 only)

- During automatic channel presetting, your TV screen will indicate "B/G", "I", "D/K" or "M" for the TV system.

Now You Are Ready. . .

To watch your TV, see page 11.



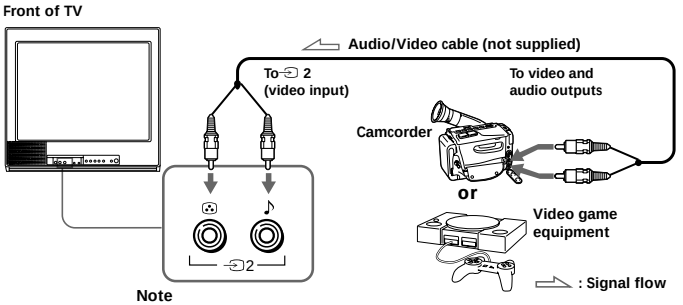
KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

Connecting optional components

You can connect optional video components, such as a VCR, multi disc player, camcorder or video game.

To watch the picture of the connected equipment, press ⊖ ⊕ (see page 12).

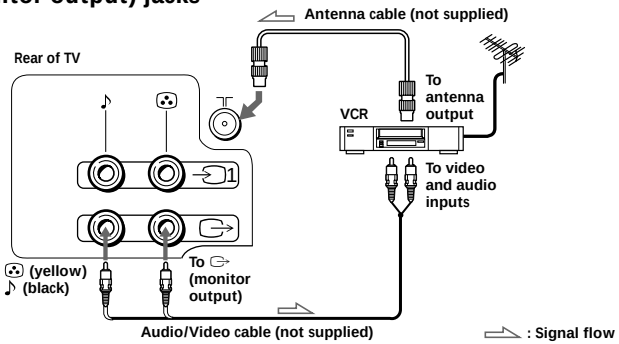
Connecting a camcorder/video game equipment using the ⊖ (video input) jacks



Note

- You can also connect video equipment to the ⊖ 1 (video input) jacks at the rear of your TV.

Connecting video equipment using the ⊖ (monitor output) jacks



Note

- When connecting a stereo VCR, connect the yellow plug to (the yellow jack) and the white plug to ♪ (the black jack).

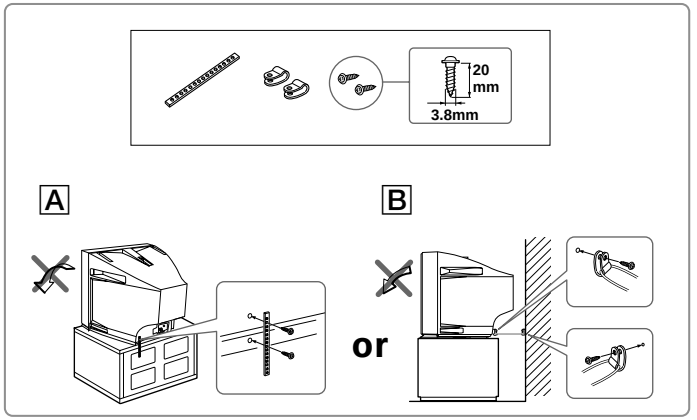
Securing the TV

To prevent the TV from falling, secure the TV using one of the following methods:

A With the supplied screws, attach the band to the TV stand and to the rear of the TV using the provided hole.

or

B Put the cord or chain through the clamps to secure the TV against a wall or pillar.

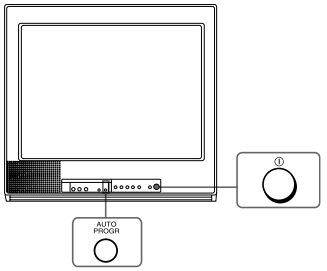


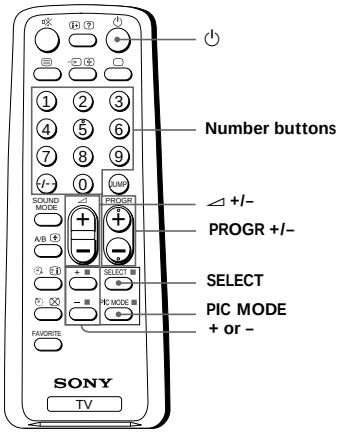
Note

- Use only the supplied screws. Use of other screws may damage the TV.

Presetting channels

You can preset up to 100 TV channels in numerical sequence from program number 1 using the remote and the buttons on your TV as well.





Presetting channels automatically

1 Press ⏻ to turn on the TV.

2 Press AUTO PROGR.

Note (KV-PF21M40/PF21M70 only)

- During automatic channel presetting, your TV screen will indicate "B/G", "I", "D/K" or "M" for the TV system.

To preset channels automatically from a specified program number

(1) Press SELECT until "AUTO PROGRAM" appears.

(2) Press + or –.
The on-screen display will start flashing.

(3) Press PROGR +/– or the number buttons until the desired program number appears.

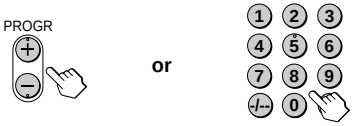
(4) Press + or –.

Presetting channels manually

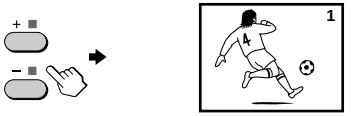
1 Press SELECT until "MANUAL PROGRAM" appears.

2 Press + or –.

3 Press PROGR +/– or the number buttons until the desired program number appears.



4 Press + or – until the desired channel picture appears.

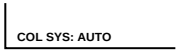


5 Press SELECT.

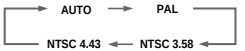
To change the color system setting (KV-PF21P10/PF21P40/PF21P41)

If the color is abnormal when receiving programs through the ⅂ (antenna) terminal or the ⇦ (video input) jack

(1) Press SELECT until "COL SYS" appears.



(2) Press + or – to select the appropriate color system until the color is optimal.



Tip

- Normally set "COL SYS" to "AUTO".

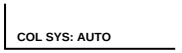
continued

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

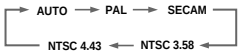
To change the color system setting (KV-PF21L70/PF21M40/PF21M70/PF21Q70)

If the color is abnormal when receiving programs through the ⅂ (antenna) terminal or the ⇦ (video input) jack

(1) Press SELECT until "COL SYS" appears.



(2) Press + or – to select the appropriate color system until the color is optimal.



Tip

- Normally set "COL SYS" to "AUTO".

Note

- The color system "NTSC3.58" is not available for KV-PF21Q70.

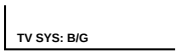
continued

Presetting channels (continued)

To change the TV system setting (KV-PF21M40/PF21M70 only)

If the picture or sound is abnormal when receiving programs through the ⅂ (antenna) terminal

(1) Press SELECT until "TV SYS" appears.



(2) Press + or – to select the appropriate TV system until the picture or sound quality is optimal.

Note

- The TV system "I" and "M" are available for KV-PF21M70 only.

Skipping program numbers

1 Press PROGR +/– or the number buttons until the unused or unwanted program number appears.

2 Press SELECT until "MANUAL PROGRAM" appears.

3 Press + or –.

4 Press PIC MODE.

5 Press SELECT.

To preset the skipped program number again

Preset the channel automatically or manually.

Tip

- You can also use SELECT and ◿ +/– on the TV to preset channels and skip program numbers.

To use the fine tuning (FINE) function

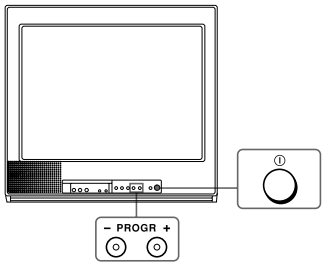
The fine tuning (FINE) function may help to reduce the following problems: double images and lines moving across the TV screen.

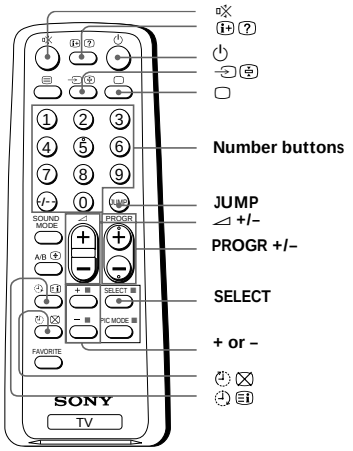
You can use the fine tuning function as below:

(1) Select the program number you want to adjust.
(2) Press SELECT until "MANUAL PROGRAM" appears on the screen.
(3) Press + or – on the remote control once.
(4) Press ⓕ ⓒ to display "FINE" on the screen.
(5) Press + or – continuously until the above problems are minimized.
The + or – icon on the screen flashes while tuning.
(6) Press SELECT to return to normal screen.

Watching the TV

This section explains functions used while watching the TV. Most operations can be done using the remote.





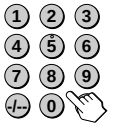
1 Press ⏻ to turn on the TV.

When the TV is in the standby mode (the ⏻ indicator on the TV is lit red), press ⏻ on the remote or PROGR +/– on the TV.

2 Press PROGR +/– or the number buttons to select the TV program.

For double digit numbers, press -/--, then the number (e.g., for 25, press -/--, then 2 and 5).

or



3 Press +/– to adjust the volume.

continued

Additional tasks

To	Do this
Turn off temporarily	Press ⏻. The ⏻ indicator on the TV lights up red.
Turn off completely	Press ⏻ on the TV.
Mute the sound	Press 🔇.
Watch the video input (VCR, camcorder, etc.)	Press INPUT to select "VIDEO 1" or "VIDEO 2". To return to the TV program, press 📺.
Jump back to the previous channel	Press JUMP.
Display the on-screen information*	Press DISPLAY.
Adjust the volume of each TV program automatically	Press SELECT repeatedly until "INTELLIGENT VOL" appears, then press + or – to select "ON". To cancel, select "OFF".

* The picture, sound, and either the program number or video mode are displayed. The on-screen display for the picture and sound information disappears after about 3 seconds.

Changing the on-screen display language (Except KV-PF21L70/PF21M70(ME)/PF21Q70)

1 Press SELECT until "LANGUAGE / 语言: ENGLISH" appears on the screen.

2 Press + or – to select " 中文 ".

Tip

- You can also use SELECT and +/– on the TV to select the on-screen display language.

Watching the TV (continued)

Changing the on-screen display language (KV-PF21L70/PF21M70(ME)/PF21Q70)

1 Press SELECT until "LANGUAGE / اللغة : ENGLISH" appears on the screen.

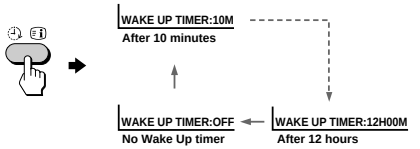
2 Press + or – to select " عربي ".

Tip

- You can also use SELECT and +/– on the TV to select the on-screen display language.

Setting the Wake Up timer

1 Press ◴ until the desired period of time appears.



2 Select the TV program or video mode you want to display when you wake up.

3 Press ⏻ or set the Sleep timer if you want the TV to turn off automatically.

The ◴ indicator on the TV lights up orange.

To cancel the Wake Up timer

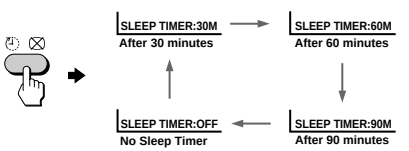
Press ◴ until "WAKE UP TIMER: OFF" appears or turn off the TV's main power.

Notes

- The Wake Up timer starts immediately after the on-screen display disappears.
- If no buttons or controls are pressed for more than two hours after the TV is turned on using the Wake Up timer, the TV automatically goes into the standby mode. To continue watching the TV, press any button or control on the TV or the remote.

Setting the Sleep timer

Press ◴ ⊠ until the desired period of time appears.

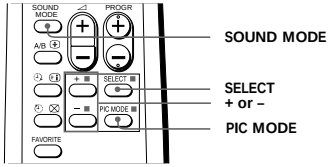


To cancel the Sleep timer

Press ◴ ⊠ until "SLEEP TIMER: OFF" appears or turn the TV off.

Customizing the picture and sound

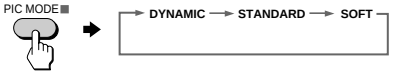
You can customize the picture and sound by selecting the picture and sound modes or by adjusting its settings.



Selecting the picture and sound modes

To select the picture mode

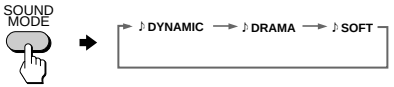
Press PIC MODE repeatedly until you get the desired picture mode.



Select	To
DYNAMIC	receive high contrast pictures.
STANDARD	receive normal contrast pictures.
SOFT	receive mild pictures.

To select the sound mode

Press SOUND MODE repeatedly until you get the desired sound mode.

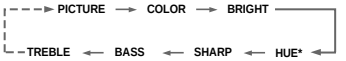


Select	To
DYNAMIC	listen to dynamic and clear sound that emphasizes the low and high sound.
DRAMA	listen to sound that emphasizes vocals and background music.
SOFT	receive soft sound.

Adjusting the picture and sound settings

1 Press SELECT until the desired setting appears.

Each time you press SELECT, the setting item will change as follows:



2 Press + or – to adjust the item.

3 To adjust other items, repeat steps 1 to 2.

* "HUE" can be adjusted for the NTSC system only.

Notes

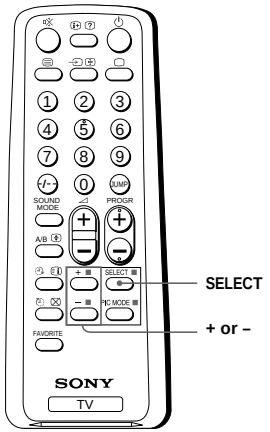
- When you select a picture or sound mode, the adjusted settings will be reset according to the selected mode.
- You can also use SELECT and ◿ +/– on the TV to adjust the picture and sound settings.

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70

RM-952

Blocking the channels (CHILD LOCK)

You can prevent a child from watching certain programs by using the buttons on the remote control.



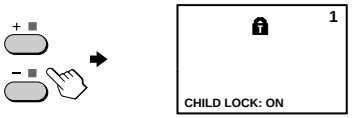
1 Select the TV program you want to lock.

2 Press SELECT until "CHILD LOCK" appears on the screen.

3 Press + or – to select "ON".

The 🔒 symbol appears on the screen.

To unlock the channel, press + or – to select "OFF". The 🔒 symbol disappears from the screen.



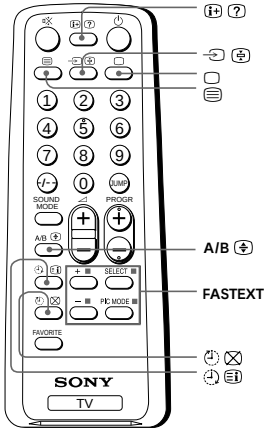
Note

- If you preset a locked channel, that particular channel will be unlocked automatically.

Viewing Teletext

(KV-PF21P41 only)

TV stations broadcast an information service called Teletext via some TV channels. Teletext allows you to receive various information, such as shares market or news.

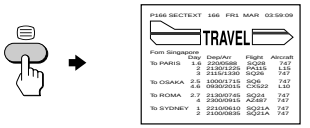


Displaying Teletext

1 Select a TV channel that carries the Teletext broadcast you want to watch.

2 Press ☰ to display the text.

A Teletext page (normally the index page) is displayed. If there is no Teletext broadcast, "100" is displayed at the top left corner of the screen.



To turn off Teletext

Press ▭.

continued

Additional Teletext tasks

To	Do this
display a Teletext page on the TV picture	Press ☰. Each time you press ☰, the screen changes as follows: Teletext → Teletext and TV → TV.
check the contents of a Teletext service	Press 🕘 i. An overview of the Teletext contents and page numbers appear on the screen.
select a Teletext page	Press the number buttons to enter the three-digit page number of the desired Teletext page.* If you make a mistake, reenter the correct page number. To access the next or previous page, press PROGR +/–.
hold a Teletext page (stop the page from scrolling)	Press ⏎ ⊕ to display the symbol "⊕" at the top left corner of the screen. To resume normal Teletext operation, press ⏎ ⊕ or ☰.
reveal concealed information (e.g., an answer to a quiz)	Press i ?. To conceal the information, press the button again.
enlarge the Teletext display	Press A/B ⊕. Each time you press A/B ⊕, the Teletext display changes as follows: Enlarge upper half → Enlarge lower half → Normal size.
wait for a Teletext page while watching a TV program	1 Enter the Teletext page number that you want to refer to, then press 🕘 ⊠. 2 When the page number is displayed, press ☰ to show the text.

* You can also select a Teletext page of any page number that appears in the colored column at the bottom of the screen using the corresponding color-coded button on the remote.

Using FASTEXT

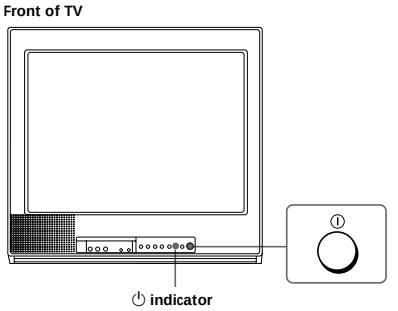
This feature allows you to quickly access a Teletext page that uses FASTEXT. When a FASTEXT program is broadcasted, the colored menus appear at the bottom of the screen. The colors of the menus correspond to the red, green, yellow, and blue color-coded buttons on the remote.

To access a FASTEXT menu

Press the color-coded button on the remote corresponding to the menu you want. The menu page appears on the screen after several seconds.

Self-diagnosis function

Your TV is equipped with a self-diagnosis function. If there is a problem with your TV, the ⏻ indicator flashes red. The number of times the ⏻ indicator flashes indicates the possible causes.



1 Check that the ⏻ indicator flashes red a number of times between 3-second intervals.

2 Count the number of times the ⏻ indicator flashes.

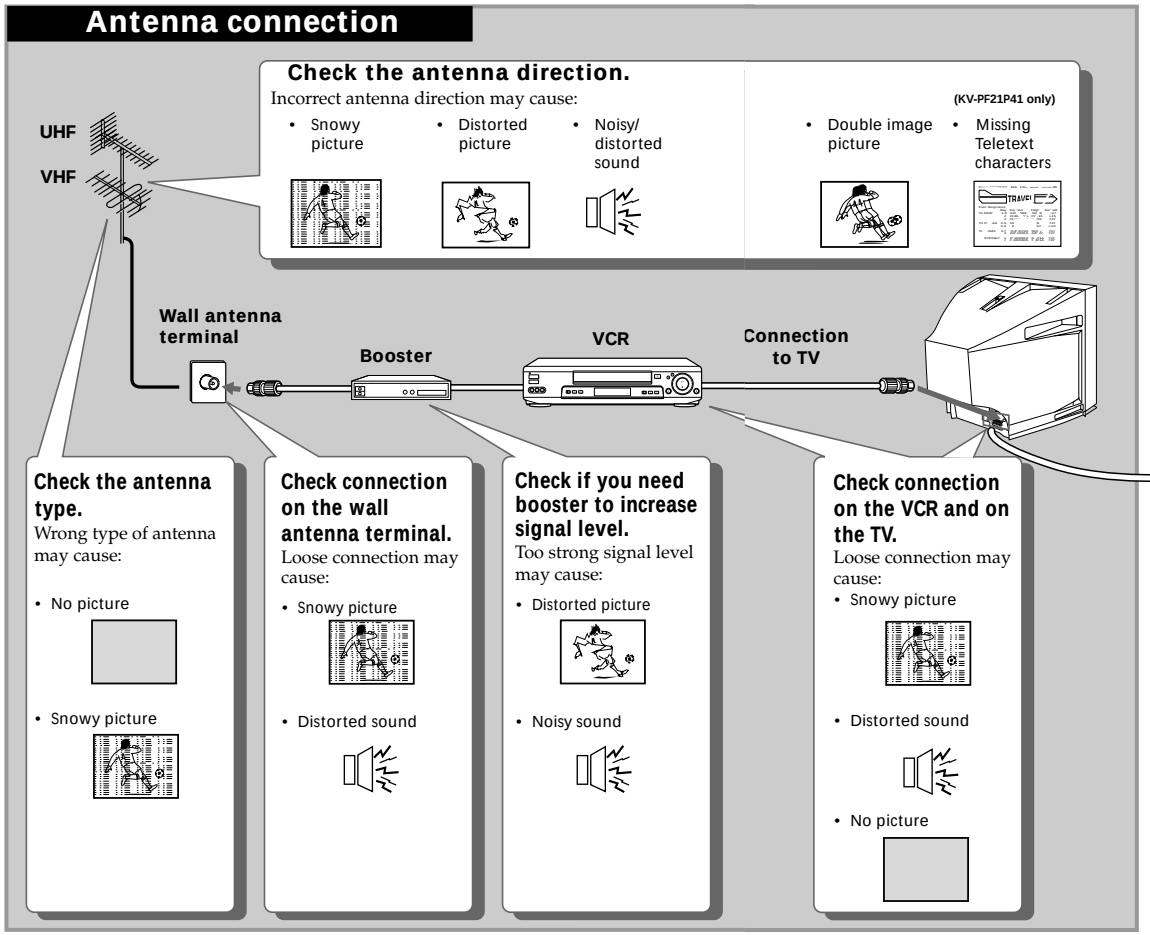
3 Press ⏻ (main power) to turn off your TV.

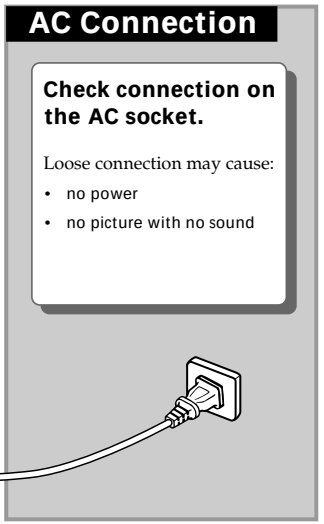
4 Inform your nearest Sony service center about the number of times the ⏻ indicator flashes.
Be sure to note the model name and serial number located on the rear of your TV.

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

Troubleshooting Shortcuts

For better viewing, please check the following connections.



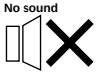


For more information, please see "Troubleshooting" on page 22, 23 and 24. Or consult your dealer for guidance.

Troubleshooting

(KV-PF21L70/PF21M70(ME)/PF21Q70)

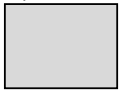
If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer .

Symptom	Solutions	Possible cause
Snowy picture Noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. (page 4)	• Connection is loose or the cable is damaged.
	• Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9)	• Channel presetting is inappropriate or incomplete.
	• Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.	• The antenna type is inappropriate.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
	• Try using a booster.	• Signal transmission is low.
Distorted picture Noisy sound	• Turn off or disconnect the booster if it is in use.	• Broadcast signals are too strong.
Good picture Noisy sound	• If the sound of some channels are noisy, select the channel, then select the appropriate TV system (TV SYS). (page 10)	• The TV system setting is inappropriate.
No picture No sound 	• Check the power cord, antenna and the VCR connections.	• The power cord, antenna or VCR is not connected.
	• Press ⏻ (power). • Press ⏼ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	• The TV is not turned on.

Troubleshooting

(KV-PF21M40/PF21M70(E))

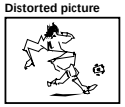
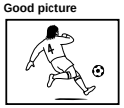
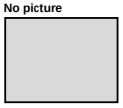
If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer .

Symptom	Solutions	Possible cause
Snowy picture Noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. (page 4)	• Connection is loose or the cable is damaged.
	• Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9)	• Channel presetting is inappropriate or incomplete.
	• Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.	• The antenna type is inappropriate.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
	• Try using a booster.	• Signal transmission is low.
Distorted picture Noisy sound	• Turn off or disconnect the booster if it is in use.	• Broadcast signals are too strong.
Good picture Noisy sound	• If the sound of all the channels are noisy, check the TV system (TV SYS) setting (page 10), then press AUTO PROGR to preset the channels again (page 8). • If the sound of some channels are noisy, select the channel, then select the appropriate TV system (TV SYS). (page 10)	• The TV system setting or channel presetting is inappropriate or incomplete.
No picture  No sound	• Check the power cord, antenna and the VCR connections.	• The power cord, antenna or VCR is not connected.
	• Press ⏻ (power). • Press ⏼ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	• The TV is not turned on.

Troubleshooting

(KV-PF21P10)

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer .

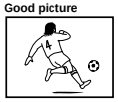
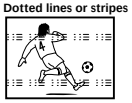
Symptom	Solutions	Possible cause
Snowy picture Noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. (page 4)	• Connection is loose or the cable is damaged.
	• Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9)	• Channel presetting is inappropriate or incomplete.
	• Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.	• The antenna type is inappropriate.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
	• Try using a booster.	• Signal transmission is low.
Distorted picture  Noisy sound	• Turn off or disconnect the booster if it is in use.	• Broadcast signals are too strong.
Good picture  Noisy sound	• If the sound of all the channels are noisy, press AUTO PROGR to preset the channels again (page 8).	• Channel presetting is inappropriate or incomplete.
No picture  No sound	• Check the power cord, antenna and the VCR connections.	• The power cord, antenna or VCR is not connected.
	• Press ⏻ (power). • Press ⏼ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	• The TV is not turned on.

Troubleshooting

(KV-PF21P40/PF21P41)

If you find any problem while viewing your TV, please check the following guide. If any problem persists, contact your Sony dealer .

Symptom	Solutions	Possible cause
Snowy picture Noisy sound	• Check the antenna cable and connection on the TV, VCR and on the wall. (page 4)	• Connection is loose or the cable is damaged.
	• Press SELECT until "MANUAL PROGRAM" appears on the screen then preset the channel again. (page 9)	• Channel presetting is inappropriate or incomplete.
	• Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.	• The antenna type is inappropriate.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
	• Try using a booster.	• Signal transmission is low.
Distorted picture Noisy sound	• Turn off or disconnect the booster if it is in use.	• Broadcast signals are too strong.
No picture No sound	• Check the power cord, antenna and the VCR connections.	• The power cord, antenna or VCR is not connected.
	• Press ⏻ (power). • Press ⏼ (main power) on the TV to turn off the TV for about five seconds, then turn it on again.	• The TV is not turned on.

Symptom	Solutions	Possible cause
Good picture  No sound	• Press + to increase the volume level.	• The volume level is too low.
	• Press to cancel the muting.	• The sound is muted.
Dotted lines or stripes 	• Do not use a hair dryer or other equipment near the TV. • Adjust the antenna direction for minimum interference. Contact a Sony dealer for advice.	• There is local interference from cars, neon signs, hair dryers, power generators, etc.
Double images or "ghosts"	• Use a highly directional antenna. • Use the fine tuning (FINE) function. (page 10)	• Broadcast signals are reflected by nearby mountains or buildings.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
	• Turn off or disconnect the booster if it is in use.	• Use of a booster is inappropriate.
NO color	• Press SELECT until "COLOR" appears on the screen, then press + or – to adjust the color level. (page 15)	• The color level setting is too low.
	• Press SELECT until "COL SYS " appears on the screen, then check the color system setting (usually set this to "AUTO"). (page 9).	• The color system setting is inappropriate.
	• Adjust the antenna direction. Contact a Sony dealer for advice.	• The antenna direction is inappropriate.
Abnormal color patches	• Keep external speakers or other electrical equipment away from the TV. Do not move the TV while the TV is turned on. Press ⏻ (main power) on the TV to turn off the TV for about five minutes, then turn it on again.	• The magnetic disturbance from external speakers or other equipment, or the direction of the earth's magnetic field may affect the TV.

continued

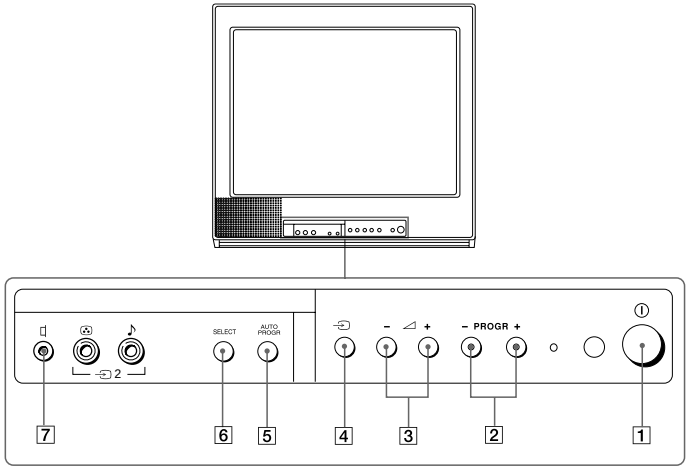
Troubleshooting (continued)

Symptom	Solutions	Possible cause
Lines moving across the TV screen.	• Use the fine tuning (FINE) function. (page 10)	• There is interference from external sources, e.g., heavy machineries, nearby broadcast station.
The ⏻ indicator on your TV flashes red a number of times between 3-second intervals.	• Contact your nearest Sony service center. (page 19)	• Your TV may need service.
TV cabinet creaks.	—	• Changes in room temperature sometimes make the TV cabinet expand or contract, making a noise. This does not indicate a malfunction.
A "boom" sound is heard when the TV is turned on.	—	• The TV's demagnetizing function is working. This does not indicate a malfunction.

Identifying parts and controls

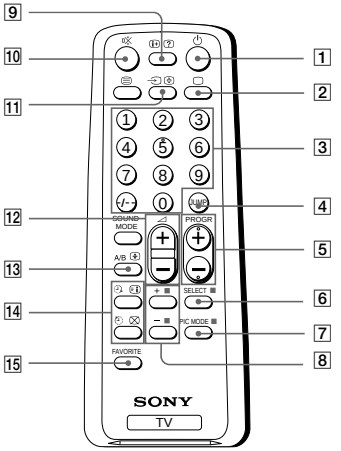
Refer to the pages indicated in parentheses ( ) for details.

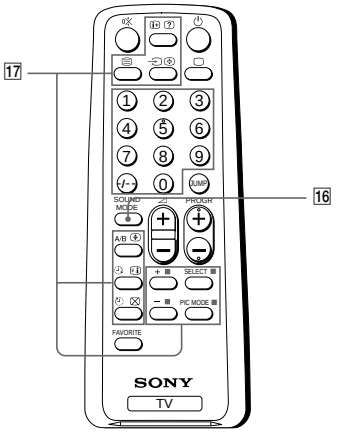
Front panel



1 ⏻ (main power) button (5)
2 PROGR +/– (program) buttons (11)
3 +/– (volume) buttons (11)
4 (TV/video) button (12)
5 AUTO PROGR (program) button (5)
6 SELECT button (9)
7 (earphone) jack

Remote Control





1 ⏻ (power) button (11)
2 (TV) button (12)
3 Number buttons (11)
4 JUMP button (12)
5 PROGR +/– buttons (11)
6 SELECT button (9)
7 PIC MODE button (14)
8 + or – buttons (9)
9 (display) button (12)
10 (muting) button (12)
11 (video) button (12)
12 +/– (volume) buttons (11)
13 A/B button
(not used for these models)
14 Timer setting buttons (13)
(wake up timer)
(sleep timer)
15 FAVORITE button
(not used for these models)

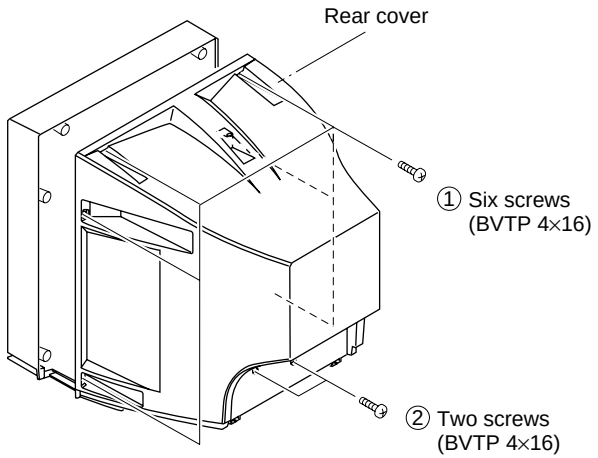
16 SOUND MODE button (14)
17 Teletext operation buttons (17)
(KV-PF21P41 only)
(text) (enlarge)
(reveal) (hold)
(index) (text clear)
■ (FASTEXT: red, green, yellow, blue)

Names/symbols of buttons on the remote are indicated in different colors to represent the available functions.

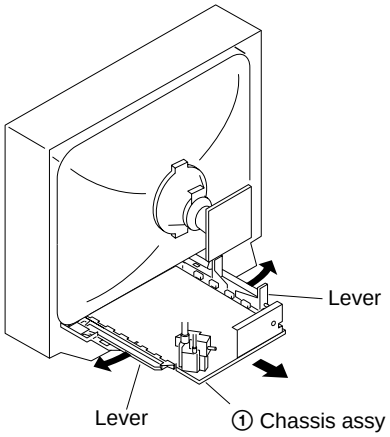
Label color	Button function
White	For general TV operations
Green	For Teletext operations

SECTION 2
DISASSEMBLY

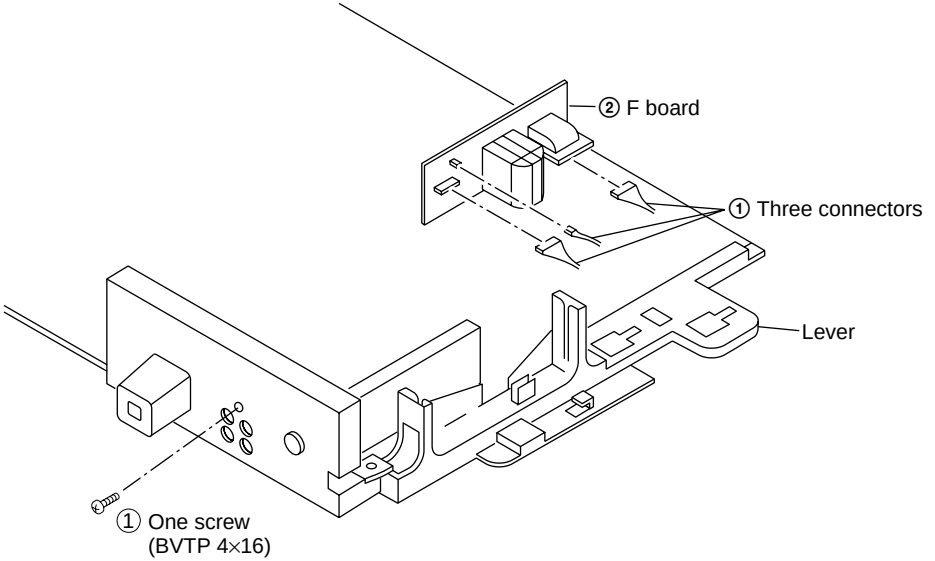
2-1. REAR COVER REMOVAL



2-2. CHASSIS ASSY REMOVAL

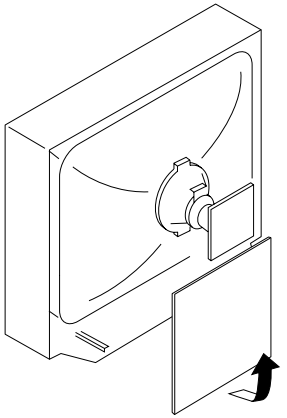


2-3. F BRACKET REMOVAL



2-4. SERVICE POSITION

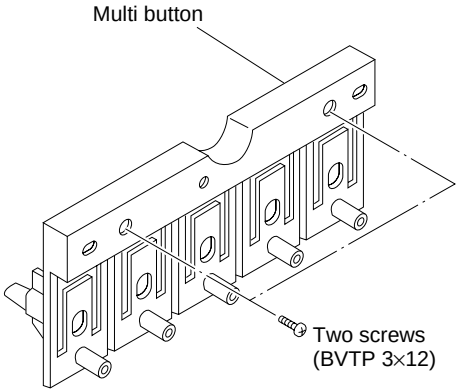
(Note: Remove F Bracket first.)



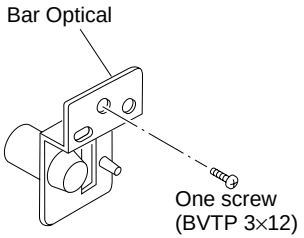
2-5. REPLACEMENT OF PARTS

For replacement of the Multi Button and Bar Optical ,unscrew to exchange with the new parts, and fix them with screws (+BVTP) respectively.

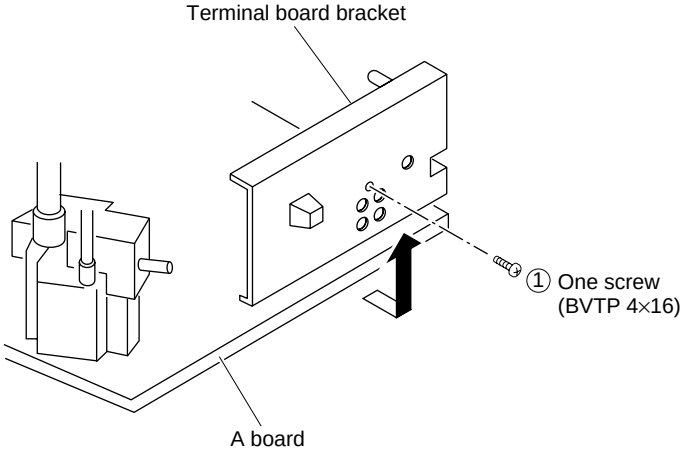
2-5-1. REPLACEMENT OF MULTI BUTTON



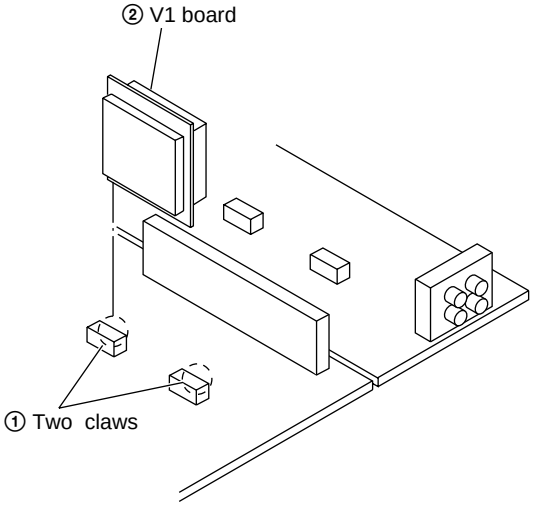
2-5-2. REPLACEMENT OF BAR OPTICAL



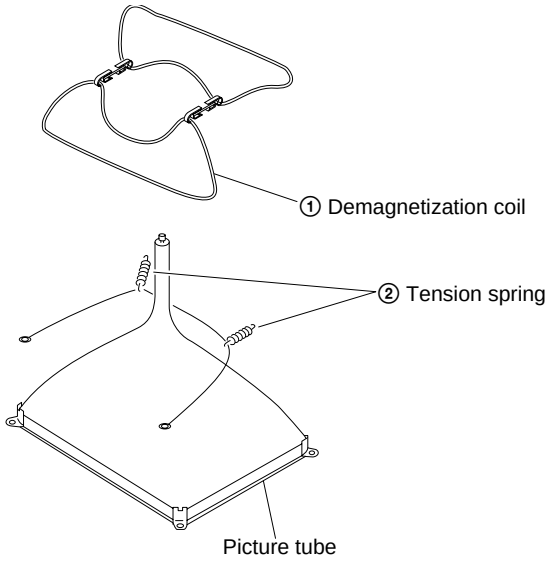
2-6. TERMINAL BRACKET REMOVAL



2-7. V1 BOARD REMOVAL

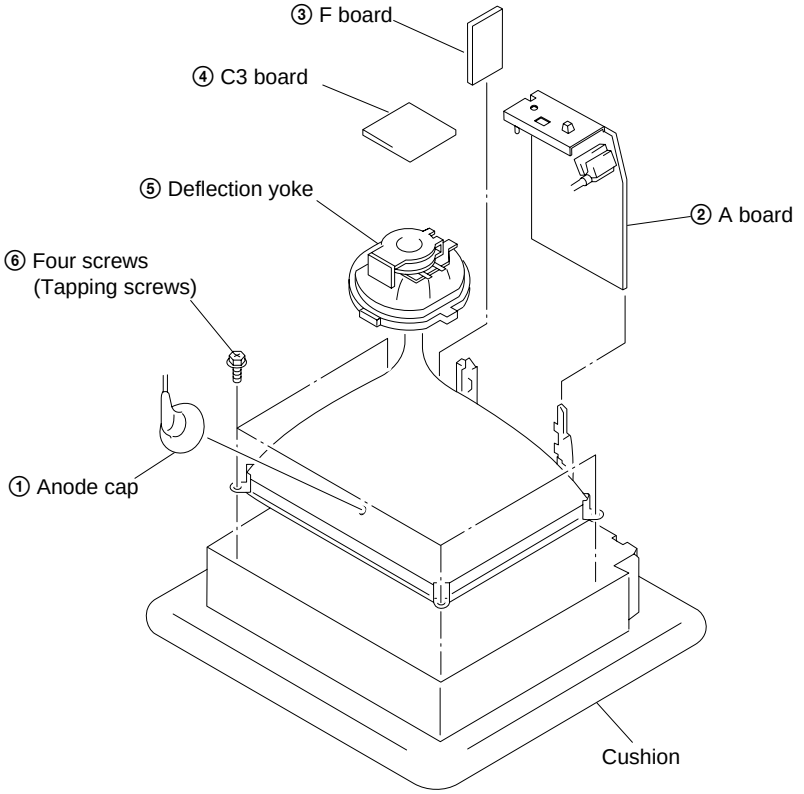


2-8. DEGAUSS COIL REMOVAL



2-9. PICTURE TUBE REMOVAL

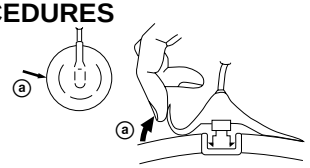
NOTE : The picture tube for OCE model is upside down, and the positon for the anode cap and tension springs are changed accordingly.



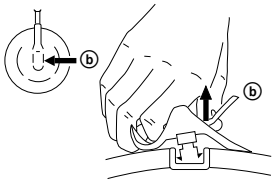
• REMOVAL OF ANODE-CAP

NOTE : After removing the anode, short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT.

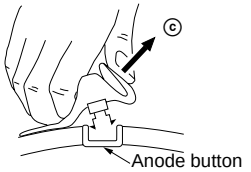
• REMOVING PROCEDURES



① **Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.**



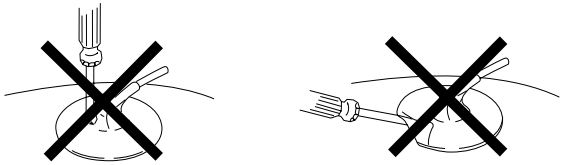
② **Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.**



③ **When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ.**

• HOW TO HANDLE AN ANODE-CAP

① **Do not damage the surface of anode-caps with sharp shaped objects.**
② **Do not press the rubber too hard so as not to damage the inside of anode-cap. A metal fitting called the shatter-hook terminal is built into the rubber.**
③ **Do not turn the foot of rubber over too hard. The shatter-hook terminal will stick out or damage the rubber.**



SECTION 3
SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switches should be set as follows unless otherwise noted:
PICTURE control ..... normal
BRIGHTNESS control ..... normal

Perform the adjustments in the following order :

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note : Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser
3. Oscilloscope

Preparation :

- In order to reduce the influence of geomagnetism on the set's picture tube, face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input a white signal with the pattern generator.
   Contrast, Brightness } normal
2. Set the pattern generator raster signal to a green raster.
3. Move the deflection yoke to the rear and adjust with the purity control so that the green is at the center and the blue and the red take up equally sized areas on each side.
   (See Figures 3-1 through 3-3.)
4. Move the deflection yoke forward and adjust so that the entire screen is green. (See Figure 3-1.)
5. Switch the raster signal to blue, then to red and verify the condition.
6. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws and DY spacers.
7. If the beam does not land correctly in all the corners, use a magnet to adjust it.
   (See Figure 3-4.)

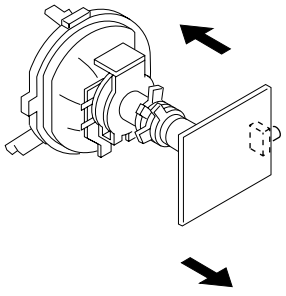


Fig. 3-1

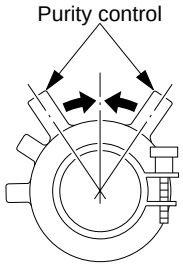


Fig. 3-2

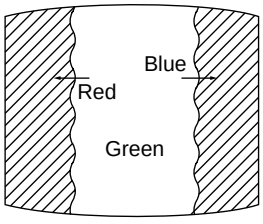


Fig. 3-3

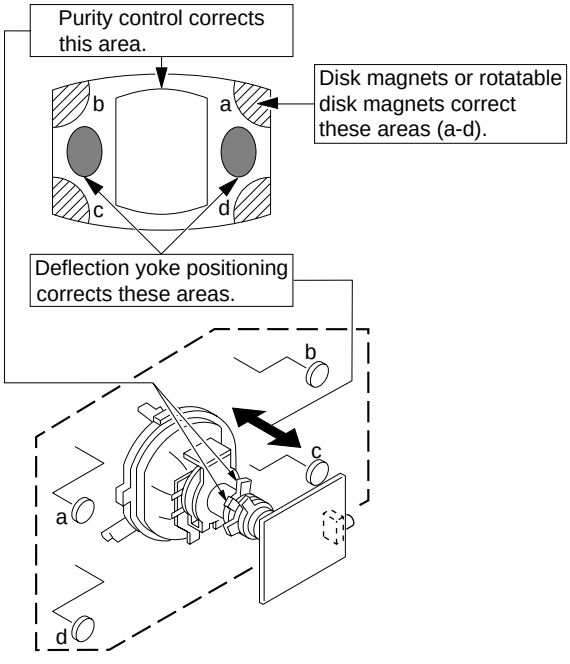


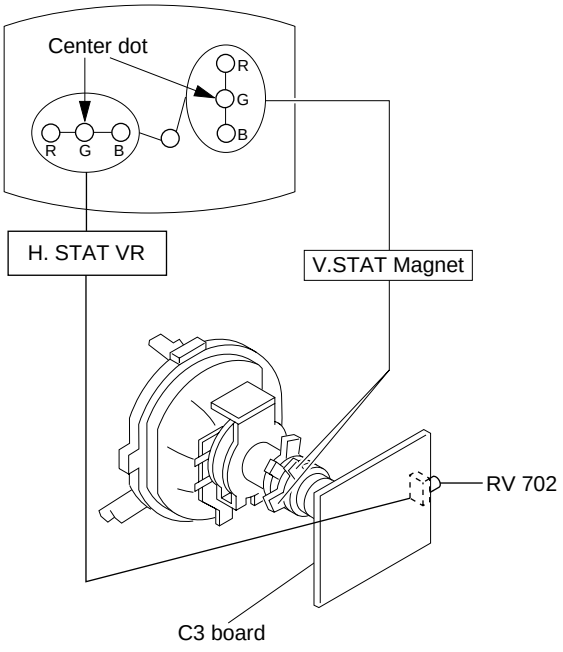
Fig. 3-4

3-2. CONVERGENCE

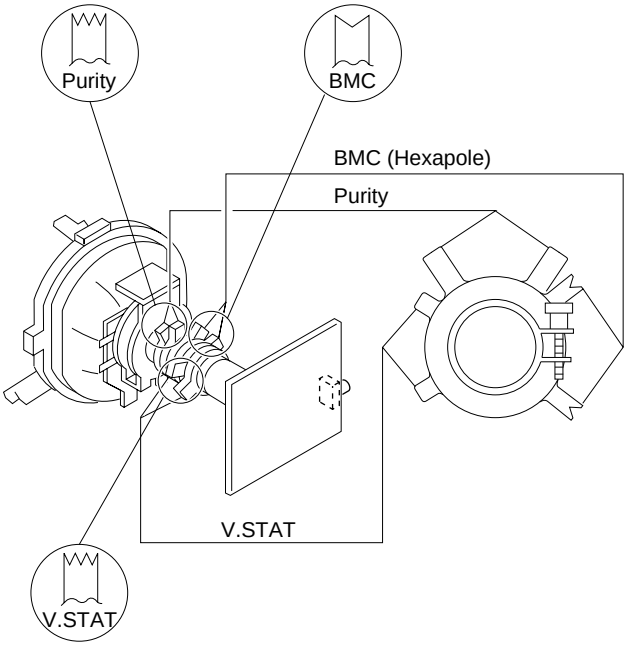
Preparation :

- Before starting this adjustment, adjust the focus, horizontal size and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

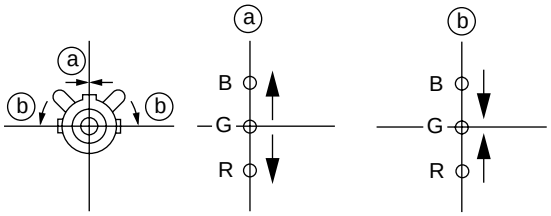
(1) Horizontal and Vertical Static Convergence



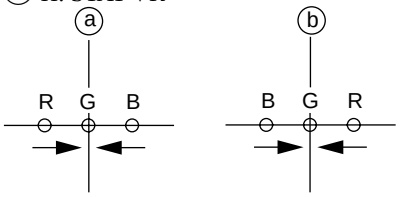
(Moving vertically), adjust the V.STAT magnet so that the red, green and blue dots are on top of each other at the center of the screen.



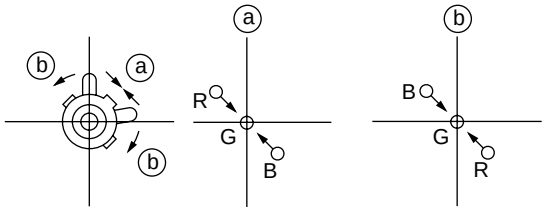
① V. STAT



② H. STAT VR

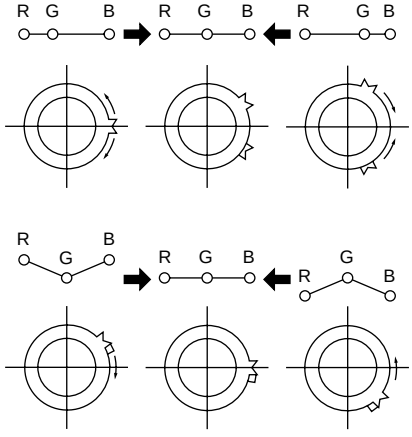


③



④ BMC (Hexapole) Magnet.

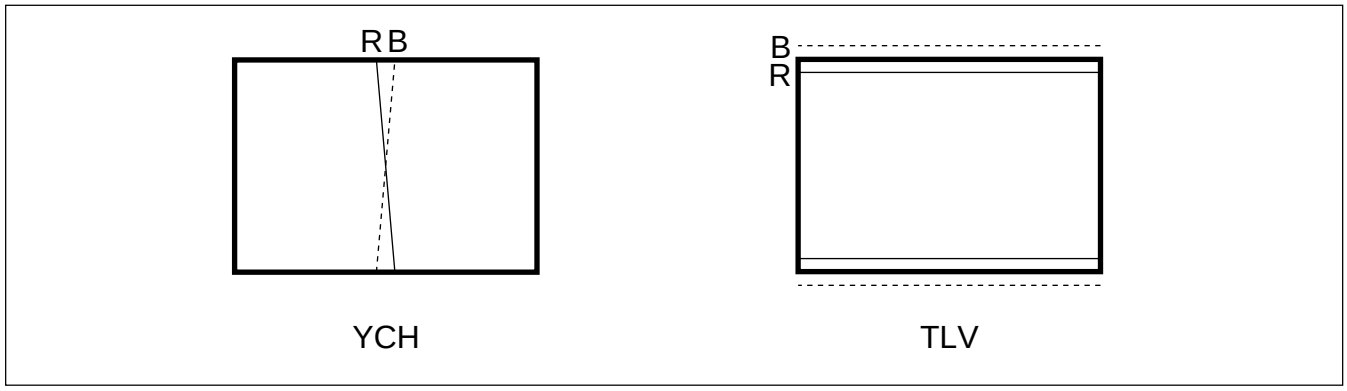
If the red, green and blue dots are not balanced or aligned, then use the BMC magnet to adjust in the manner described below.



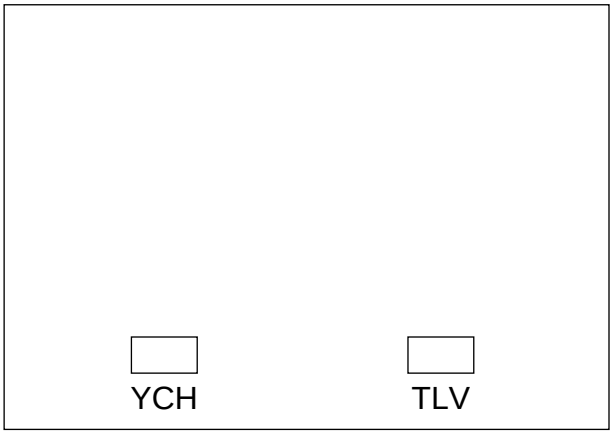
(2) Dynamic Convergence Adjustment

Preparation:

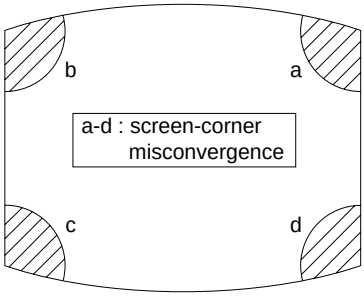
- Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence

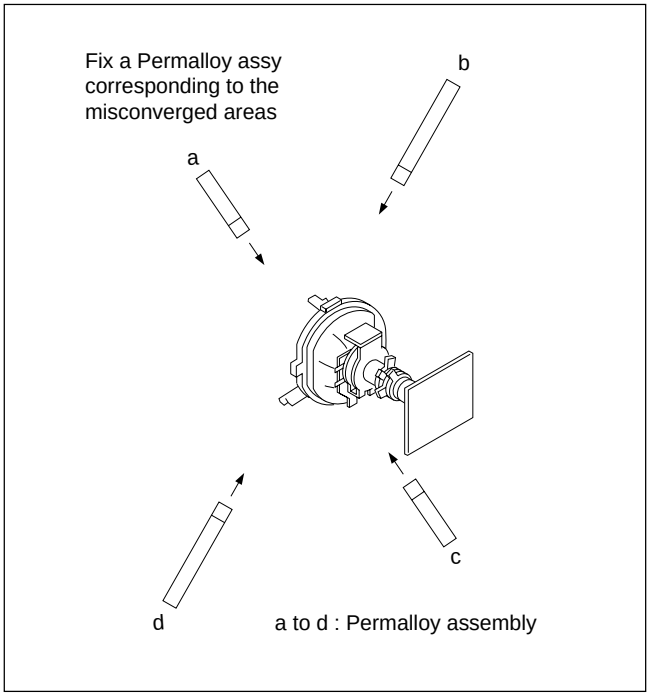


on DY



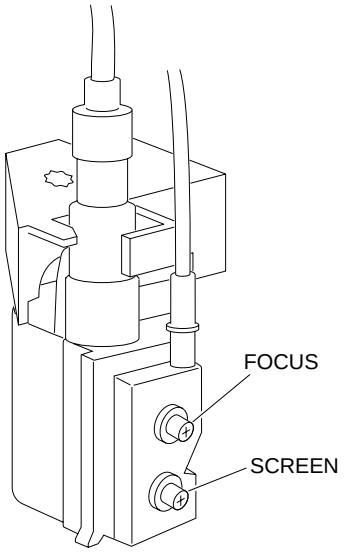
(3) Screen-corner Convergence





3-3. FOCUS ADJUSTMENT

Adjust FOCUS control on the flyback transformer for the best focus.

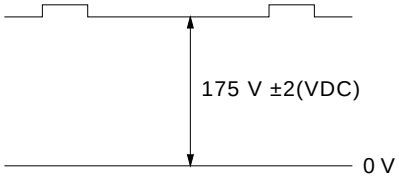


FLYBACK TRANSFORMER (T503)

3-4. G2 (SCREEN) AND WHITE BALANCE ADJUSTMENTS

1. G2 (SCREEN) ADJUSTMENT

1) Set the PICTURE to normal.
2) Put to VIDEO input mode without signals.
3) Connect R, G and B of the C3 board cathode to the oscilloscope.
4) Adjust BRIGHTNESS to obtain the cathode voltage to the value below.
5) Adjust G2 (Screen) on FBT until picture shows the point before cut-off.

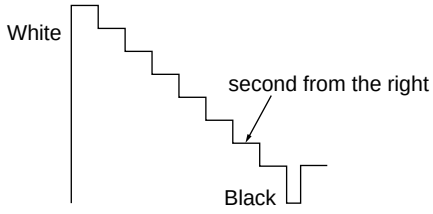


2. WHITE BALANCE ADJUSTMENT

1) Set to Service Mode (Refer Section 4-1: ADJUSTMENTS WITH COMMANDER).
2) Input white raster signal.
3) Set the PICTURE to minimum.
4) Select GCT (WHB 4) and BCT (WHB 5) with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
5) Set the PICTURE to maximum.
6) Select GDR (WHB 1) and BDR (WHB 2) with [1] and [4], and adjust the level with [3] and [6] for the best white balance.
7) Write into the memory by pressing [MUTING] then [0].

3. SUB BRIGHT ADJUSTMENT

1) Set to service mode.
2) Input a staircase signal of black to white from the pattern generator.
3) BRIGHTNESS .... 50%.
   PICTURE ..... MINIMUM
4) Select SBR (WHB7) with [1] and [4], and adjust SBR (WHB7) level with [3] and [6] so that the second stripe from the right is dimly lit.



SECTION 4
CIRCUIT ADJUSTMENTS

4-1. ADJUSTMENTS WITH COMMANDER

Service adjustments are made with the RM-952 that comes with this unit.

a. ENTERING SERVICE MODE

With the unit on standby
↓
DISPLAY
↓
5
↓
VOL (+)
↓
POWER

This operation sequence puts the unit into service mode.

b. METHOD OF CANCELLATION FROM SERVICE MODE

Set the standby condition (Press POWER button on the commander), then press POWER button again, hereupon it becomes TV mode.

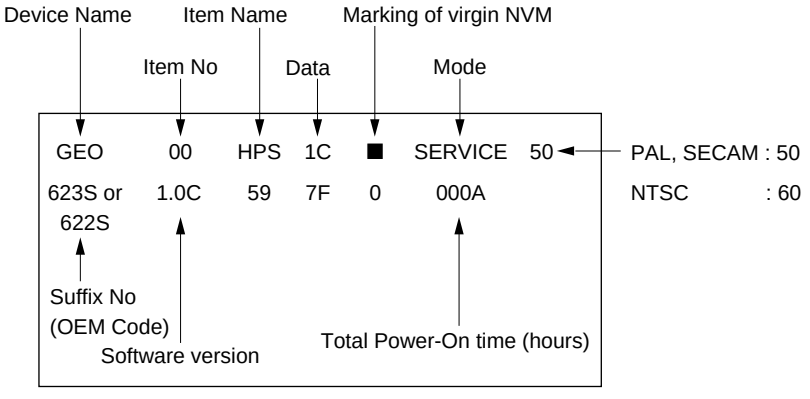
c. METHOD OF WRITE INTO MEMORY

1) Set to Service Mode.
2) Press 1 (UP) and 4 (DOWN), select an item of adjustment.
3) Press MUTING button and it will indicate WRITE on the screen.
4) Press 0 button to write into memory.

d. MEMORY WRITE CONFIRMATION METHOD

1) After adjustment, pull out the plug from AC outlet, and then plug into AC outlet again.
2) Turn the power switch ON and set to Service Mode.
3) Call the adjusted items again to confirm adjustments were made.

The screen display is :



1, 4 ↓	Select the adjustment item.
3, 6 ↓	Raise/lower the data value.
MUTING ↓	Writes.
0	Executes the writing.

7, 0	All the data becomes the values in memory.
8, 0	All user control goes to the standard state.
5, 0	Service data initialization (Be sure not to use usually.)
2, 0	Write 50Hz adjustment data to 60Hz, or vice versa.

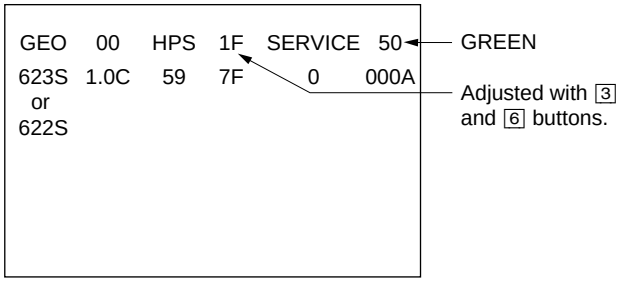
RM-952

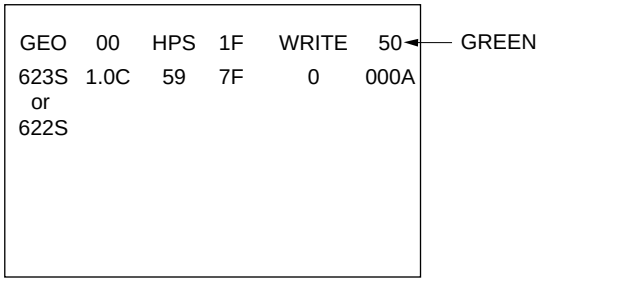
4-2. ADJUSTMENT METHOD

Item Number 00 of device GEO

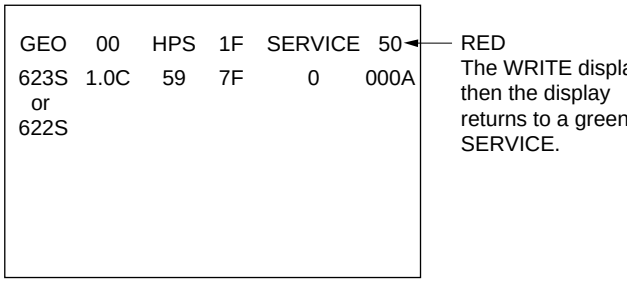
This explanation uses H-Position as an example.

1. Select “GEO 00 HPS” with the [1] and [4] buttons.
2. Raise/lower the data with the [3] and [6] buttons.
3. Select the optimum state. (The standard is 1F for PAL reception.)
4. Write with the [MUTING] button. (The display changes to WRITE.)
5. Execute the writing with the [0] button. (The WRITE display will be changed to red color while excuting, and back to SERVICE.)





Written with [MUTING]



Write executed with [0]

Use the same method for all Items. Use [1] and [4] to select the adjustment item, use [3] and [6] to adjust, write with [MUTING], then execute the write with [0].

Note : 1. In [WRITE], the data for all items are written into memory together.

2. For adjustment items that have different standard data between 50Hz or 60Hz, be sure to use the respective input signal after adjustment.

Adjustment Item Table

Category	Functionality		Micro	Data Range	Function	Note for	Register	Slave	RAM Address
	No.	Name	Init			Different Data	No. (bit)	Address	(bit)
GEO	0	HPS	7	3F	H Position	50/60HZ	12 (7-2)	CXA2130S(88H)	82 (7-2)
	1	HSZ	1F	3F	H Size	50/60HZ	11 (7-2)		81 (7-2)
	2	PAP	1F	3F	Pin Amp	50/60HZ	13 (7-2)		83 (7-2)
	3	TLT	7	0F	Trapezium	50/60HZ	15 (7-4)		85 (7-4)
	4	VPS	1F	3F	V Position	50/60HZ	0F (7-2)		7F (7-2)
	5	VSZ	1F	3F	V Size	50/60HZ	0E (7-2)		7E (7-2)
	6	SCO	7	0F	S Correction	50/60HZ	10 (7-4)		80 (7-4)
	7	VLN	7	0F	V Linearity	50/60HZ	10 (3-0)		80 (3-0)
	8	BOW	7	0F	AFC Bow	50/60HZ	16 (7-4)		86 (7-4)
	9	AGL	7	0F	AFC-Angle	50/60HZ	16 (3-0)		86 (3-0)
	10	UPN	1F	3F	Upper Pin	50/60HZ	14 (7-2)		84 (7-2)
	11	LPN	1F	3F	Lower Pin	50/60HZ	18 (7-2)		88 (7-2)
	12	HBL	0	1	H Blanking on/off		18 (1)		67 (1)
	13	LBL	7	0F	Left H Blanking	50/60HZ	17 (7-4)		87 (7-4)
	14	RBL	7	0F	Right H Blanking	50/60HZ	17 (3-0)		87 (3-0)
WHB	0	RDR	2A	3F	R Drive	DYNAMIC/others	09 (7-2)	CXA2130S(88H)	8F (7-2)
	1	GDR	2A	3F	G Drive	DYNAMIC/others	0A (7-2)		90 (7-2)
	2	BDR	2A	3F	B Drive	DYNAMIC/others	0B (7-2)		91 (7-2)
	3	RCT	7	0F	R Cutoff	SECAM/others	07 (3-0)		93 (3-0)
	4	GCT	7	0F	G Cutoff	SECAM/others	08 (7-4)		94 (7-4)
	5	BCT	7	0F	B Cutoff	SECAM/others	08 (3-0)		94 (3-0)
	6	BMN	15	1F	Brightness Minimum Data				97
	7	SBR	28	3F	Sub Brightness Control				98
SAJ	0	PMX	33	3F	Picture Maximum Data			CXA2130S(88H)	96
	1	SHU	8	0F	Sub Hue Control	TV/Video			99
	2	SSH	3	0F	Sub Sharpness Control	TV/Video			9A
	3	SCL	1F	3F	Sub Color Control	NTSC/others			9B
VP	0	EHT	4	0F	EHT Comp	50/60HZ	15 (3-0)	CXA2130S(88H)	85 (3-0)
	1	GMA	2	03	Gamma Correction	Refer NVM Map A4	0B (1-0)		1A3 (1-0)
	2	YDL	6	0F	Y Delay	PAL/SECAM/NTSC	0C (3-0)		8C (3-0)
	3	SST	1	03	SECAM ID Start Position		1B (1-0)		6A (1-0)
	4	SSP	1	03	SECAM ID Stop Position		1B (3-2)		6A (3-2)
	5	SLV	2	03	SECAM ID Level		1C (1-0)		6B (1-0)
	6	SBF	22	3F	SECAM BELL fO		1C (7-2)		6B (7-2)
	7	DYC	0	1	Dynamic Color on/off		0A (1)		59 (1)
	8	ABL	1	1	ABL Mode Switching	STANDARD Always 0	09 (1)		58 (1)
	9	VTH	1	1	ABL Detection Vth Switching		09 (0)		58 (0)
	10	SFO	1	1	FO Switching for Sharpness	NTSC/others	05 (1)		198 (1)
	11	DCX	1	1	DC Trans. Ratio Switching		06 (1)		55 (1)
	12	SHT	1	1	Pre-/Overshoot ratio Switch	NTSC/others	06 (0)		199 (0)

Adjustment Item Table

Category	Functionality No.	Functionality Name	Micro Init	Data Range	Function	Note for Different Data	Register No. (bit)	Slave Address	RAM Address (bit)
VP	13	HDW	0	1	H Drive Pulse Width Switch		00 (6)		4F (6)
	14	AFC	1	03	AFC Gain Control	TV/Video/Text	0F (1-0)		8D (1-0)
	15	HOS	7	0F	H Oscillation		0C (7-4)		5B (7-4)
	16	HSS	0	1	Slice Level of H Sync Sep.		0D (1)		5C (1)
	17	VSS	0	1	Slice Level of V Sync Sep.		0D (0)		5C (0)
	18	HMS	0	1	Macro Vision C/m off/on	50/60Hz	0E (0)		7E (0)
	19	YUV	0	1	YUV Switch Control		01 (0)		50 (0)
	20	CDV	1	3	CD mode for Video	Video only	0D (5-4)		1A1 (5-4)
	21	RON	1	1	R ON	not memorized	01 (3)		50 (3)
	22	GON	1	1	G ON	not memorized	01 (2)		50 (2)
	23	BON	1	1	B ON	not memorized	01 (1)		50 (1)
	24	PON	1	1	P ON	not memorized	00 (7)		4F (7)
	25	BLK	0	1	BLK Off		12 (0)		61 (0)
	26	VMC	0	1	VM Off		13 (0)		62 (0)
AP	0	INF	0	3F	Input Attenuation When surround off		00 (5-0)	TDA7429	19F (5-0)
	1	INS	0	3F	Input Attenuation When surround on				1A0 (5-0)
	2	PH1	0	3	Phase 1 Register Selection		02		76 (1-0)
	3	PH2	0	3	Phase 2 Register Selection				76 (3-2)
	4	PH3	0	3	Phase 3 Register Selection				76 (5-4)
	5	PH4	0	3	Phase 4 Register Selection				76 (7-6)
	6	BCS	2	3	Bass Center Shift		#4 (3-0)		1A8 (1-0)
	7	TCS	2	3	Treble Center Shift		#5 (3-0)		1A9 (1-0)
	8	TRF	2	3	RF Treble Offset		#5 (3-0)		1A9 (5-4)
MSP	0	WST	15	FF	W/G Stereo Threshold			MSP3415D	157 (7-0)
	1	WBT	EA	FF	W/G Bilingual Threshold			(84H)	158 (7-0)
	2	WLL	5	FF	W/G Monaural Threshold				159 (7-0)
	3	WAC	0	0F	W/G Agreement Count				15A (3-0)
	4	WDL	30	FF	W/G Search Delay				15B (7-0)
	5	NDL	20	FF	NICAM Search Delay				15C (7-0)
	6	SDL	10	FF	Stereo status Read Delay				15D (7-0)
	7	AGC	1	1	AGC Switch Auto/Constant		BB (7)		108 (7)
	8	REL	28	3F	AGC Gain at Constant Mode		BB (6-1)		108 (6-1)
	9	CRM	0	1	Carrier muting on/off		BB (9)		107 (1)
	10	ACO	1	1	Audio Clock out on/off		83 (5)		10C (5)
	11	FP	1B	7F	FM Prescale for non-M system		0E (7-0)		16C (6-0)
	12	FPM	32	7F	FM Prescale for M system		0E (7-0)		16D (6-0)
	13	FH	36	7F	FM Prescale for HDEV		0E (7-0)		16E (6-0)
	14	FHM	65	7F	FM Prescale for HDEV and M		0E (7-0)		16F (6-0)
	15	WGP	2A	7F	W/G Prescale		0E (7-0)		170 (6-0)
	16	NIP	6D	7F	NICAM Prescale		10 (7-0)		138 (6-0)
	17	ERR	50	FF	Auto FM switch Threshold		21 (10-3)		166 (7-0)
	18	VOL	6D	FF	Loud Speaker gain 7000h to 7ffoh		0000 (15-4)		1A7 (7-0)

Adjustment Item Table

Category	Functionality No.	Functionality Name	Micro Init	Data Range	Function	Note for Different Data	Register No. (bit)	Slava Address	RAM Address (bit)
TXT	0	TXH	1	3	Teletext Horizontal Position			(58H)	18D (1-0)
	1	TXV	0	3	Teletext Vertical Position				18D (6-4)
OPM	0	OSH	0A	3F	OSD H Position	Option-Misc			AC (7-2)
	1	COM	0	03	Comb Selection				A5 (7-6)
	2	APC	1	1	APC Switch				A4 (5)
	3	TSY	0	03	TV Sys at Auto TV Sys				A4 (4-3)
	4	MUT	0	1	No Signal Mute				A4 (0)
	5	AFM	0	1	Auto FM switch				A4 (1)
	6	RFB	0	3	C-BPF Control				A5 (5-4)
	7	TV0	0	7	Tilt to V-Angle offset				A5 (2-0)
	8	DBL	0	1	Disable Blueback Function				A4 (2)
OPB	0	OP1	FF	FF	Optional Bits 1 (see below)	Option-Bits			45
	1	OP2	1	FF	Optional Bits 2 (see below)				46
	2	OP3	0	FF	Optional Bits 3 (see below)				47

NOTE

- shaded items are fixed data.
- Standard data listed on the Adjustment Item Table are reference values, therefore it may be different for each model and for each mode.
- Note for Different Data Those are the standard data values written on the microprocessor. Therefore, the data values of the modes and stored respectively in the memory.
  In case of a device replacement, adjustment by rewriting the data value is necessary for some items.

ITEM INFORMATION.

No. OPB0 OP1

Item	XTAL 4.43	XTAL 3.58	SECAM	2nd. Lang	B/G	I	D/K	M
KV-PF21L70	1	1	1	1	1	0	0	0
KV-PF21M40	1	1	1	1	1	1	1	1
KV-PF21M70 (E)	1	1	1	1	1	1	1	1
KV-PF21M70 (ME)	1	1	1	1	1	1	1	1
KV-PF21P10	1	1	0	1	1	0	0	0
KV-PF21P40 (Singapore)	1	1	0	1	1	0	0	0
KV-PF21P40 (Malaysia)	1	1	0	1	1	0	0	0
KV-PF21P41	1	1	0	1	1	0	0	0
KV-PF21Q70	1	0	1	1	1	0	0	0

No. OPB1 OP2

Item	TOP	NICAM	HDEV	Thai Bil	Dis Fav.	DVD Input	AV Input	
KV-PF21L70	0	0	0	0	1	0	1	0
KV-PF21M40	0	0	0	0	1	0	1	0
KV-PF21M70 (E)	0	0	0	0	1	0	1	0
KV-PF21M70 (ME)	0	0	0	0	1	0	1	0
KV-PF21P10	0	0	0	0	1	0	1	0
KV-PF21P40 (Singapore)	0	0	0	0	1	0	1	0
KV-PF21P40 (Malaysia)	0	0	0	0	1	0	1	0
KV-PF21P41	0	0	0	0	1	0	1	0
KV-PF21Q70	0	0	0	0	1	0	1	0

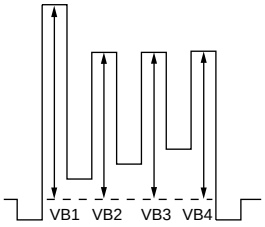
No. OPB2 OP3

Item	Pic Rot	2199 Curve	Auto PIC	Auto TV sys	US ST	AV Mono	11 KEY	Color SW
KV-PF21L70	0	0	1	0	0	1	0	1
KV-PF21M40	0	0	1	0	0	1	0	1
KV-PF21M70 (E)	0	0	1	0	0	1	0	1
KV-PF21M70 (ME)	0	0	1	0	0	1	0	1
KV-PF21P10	0	0	1	0	0	1	0	1
KV-PF21P40 (Singapore)	0	0	1	0	0	1	0	1
KV-PF21P40 (Malaysia)	0	0	1	0	0	1	0	1
KV-PF21P41	0	0	1	0	0	1	0	1
KV-PF21Q70	0	0	1	0	0	1	0	1

4-3. PICTURE QUALITY ADJUSTMENTS

SUB COLOR ADJUSTMENT

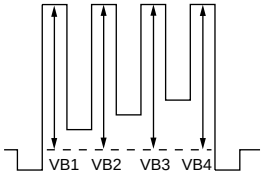
1. Input a PAL color-bar.
2. Set to the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
3. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
4. Set to Service Mode and select SAJ 3 'SCL' with [1] and [4] of the commander then adjust to VB2=VB3=VB4 with [3] and [6].
5. Press [MUTING] → [0] of the commander to write the data.
6. Adjust SAJ 3 'SCL' as step 2 to 5 when receiving NTSC color-bar.



VB2 = VB3 = VB4

SUB HUE ADJUSTMENT

1. Select Video 1.
2. Input a NTSC color-bar, video into Video 1.
3. Set the following condition:
   PICTURE 100%, BRIGHTNESS 50%, COLOR 50%
4. Connect an oscilloscope to pin ① (B OUT) of CN305, A board.
5. Select SAJ 1 'SHU' with [1] and [4] of the commander by setting to Service Mode and adjust to VB1=VB2=VB3=VB4 with [3] and [6].

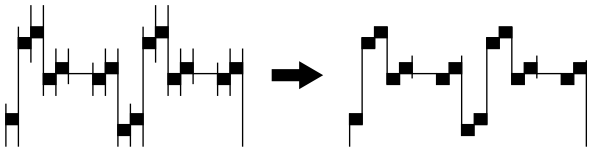


VB1 = VB2 = VB3 = VB4

6. Press [MUTING] → [0] of the commander to write the data.

BELL FILTER ADJUSTMENT

1. Input SECAM color-bar signal.
2. Connect the dual-trace oscilloscope to the pin ⑨ (R-Y) of CN303 (not mounted).
3. Adjust SERVICE MODE, ITEMS 'SBF' as shown below.



4-4. A BOARD ADJUSTMENT AFTER IC003 (MEMORY) REPLACEMENT

When replacing IC003 (MEMONY), be sure to change IC001 (µ-COM) to the following new IC at the same time.

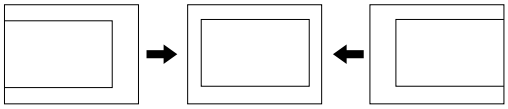
IC001 (µ-CON) : CXP86461-622S (For ME)
: CXP86461-623S (Except ME)

1. Enter to Service Mode.
2. Press commander buttons [5] and [0] (Data Initialize), and [2] and [0] (Data Copy) to initialize the data.
3. Call each item number and check if the respective screen shows the normal picture.
   In cases where items are not well adjusted, rectify the items with fine adjustment.
   Write the data per each item number ([MUTING] +[0]).
4. Select item numbers "OPB0" (OP1), "OPB1" (OP2) and "OPB2" (OP3) and respectively set the bit per model with command buttons [3] and [6].
5. Press commander buttons [8] and [0] (Test Normal) to return to the data that was set on the shipment from the factory.
   (This will also cancel Service Mode.)

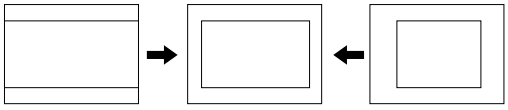
4-5. PICTURE DISTORTION ADJUSTMENT

Item Number 00 – 0B

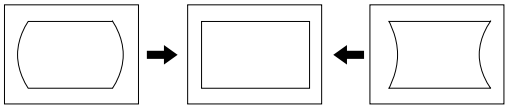
GEO 0 HSH (H POSITION)



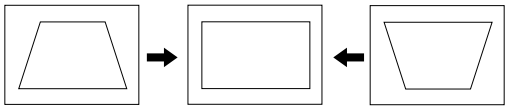
GEO 1 HSZ (H SIZE)



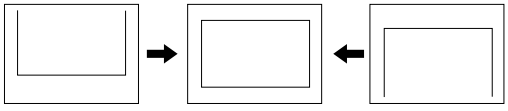
GEO 2 PAP (PIN AMP)



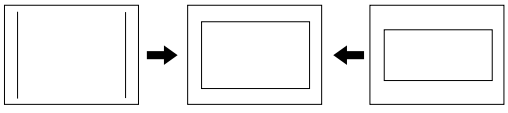
GEO 3 TILT (TRAPEZIUM)



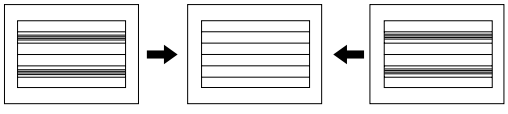
GEO 4 VSH (V POSITION)



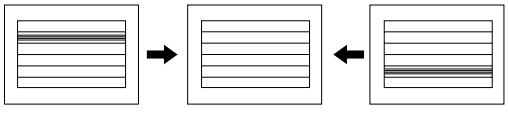
GEO 5 VSZ (V SIZE)



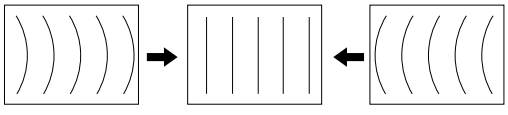
GEO 6 SCR (VERTICAL S-Correction)



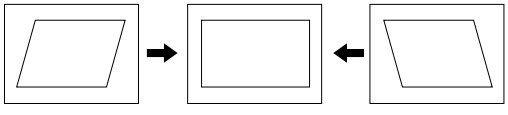
GEO 7 VLN (V LINEARITY)



GEO 8 VBOW (AFC.BOW)

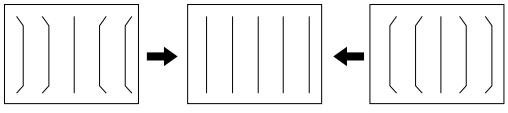


GEO 9 AGL (AFC.ANGLE)



GEO 0A UCP (UPPER CORNER PIN)

GEO 0B LCP (LOWER CORNER PIN)



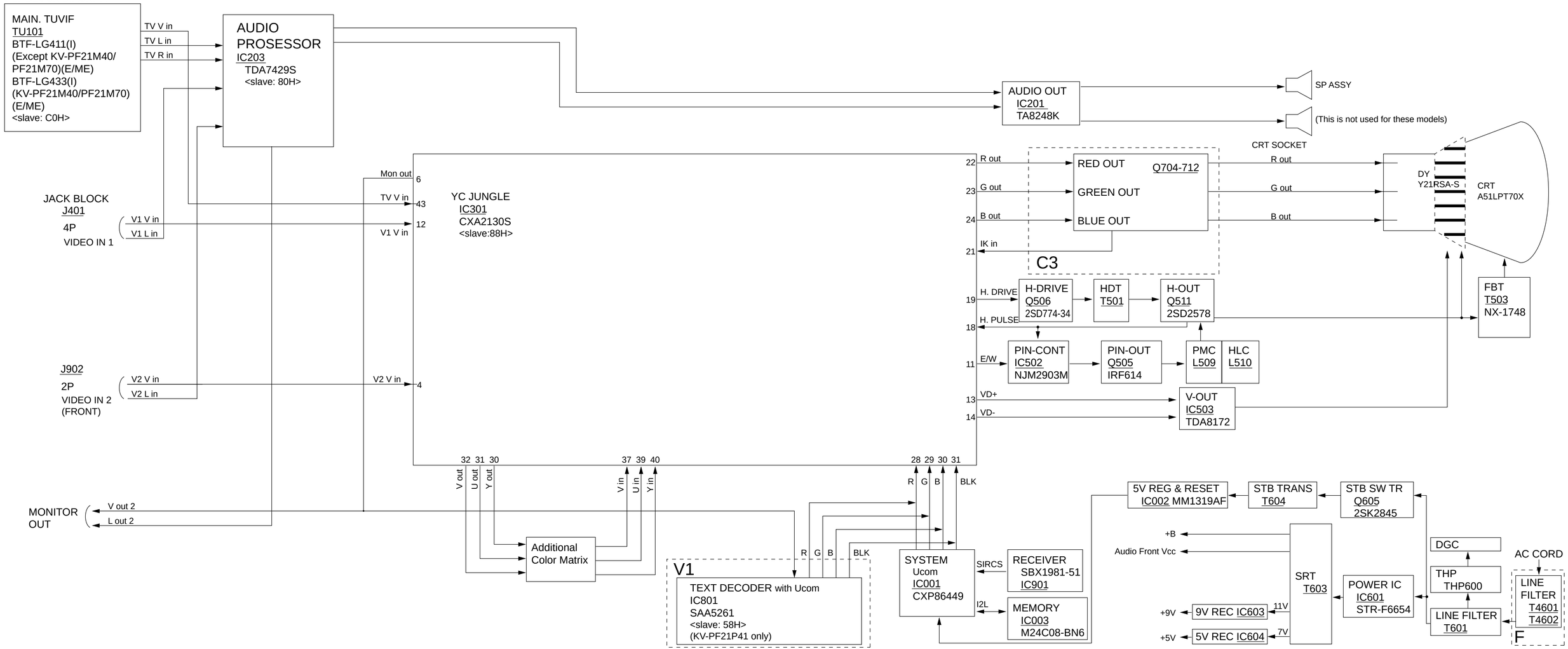
MEMO

MEMO

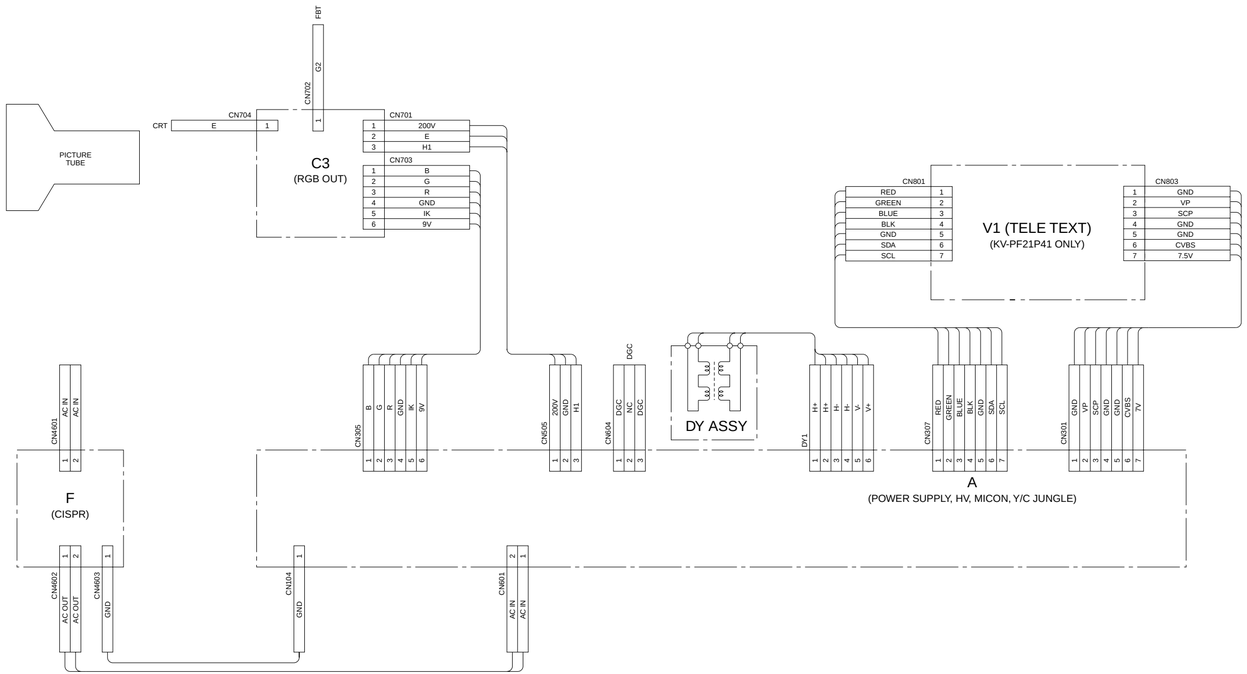
KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

5-1. BLOCK DIAGRAM



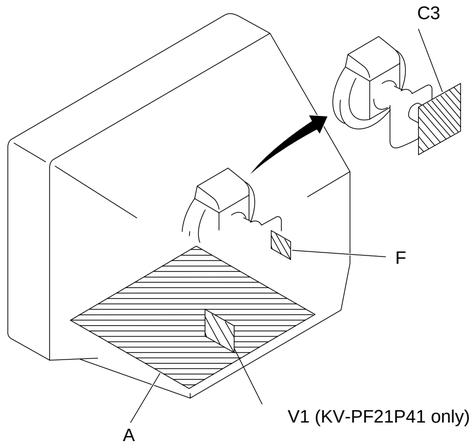
5-2. FRAME SCHEMATIC DIAGRAM



KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

5-3. CIRCUIT BOARDS LOCATION



5-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted.
- All electrolytic capacitors are rated at 50V unless otherwise noted.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance which does not have rating electrical power is as follows.

  Pitch: 5 mm
  Rating electrical power 1/4W (CHIP: 1/10W)

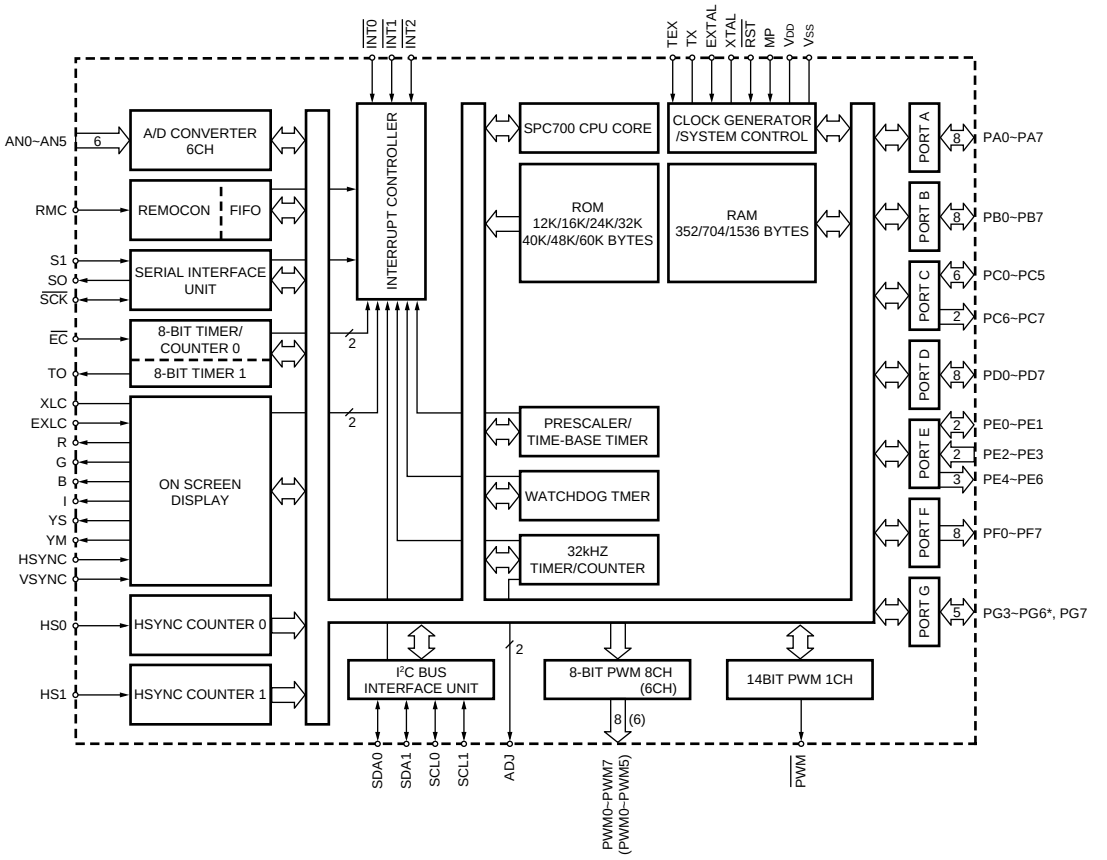
- : nonflammable resistor.
- △ : internal component.
- : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B unless otherwise noted.
- **Readings are taken with a color-bar signal input.**
  no mark : PAL
  ( ) : SECAM
  [ ] : NTSC 3.58
  « » : NTSC 4.43
- **Readings are taken with a 10 MΩ digital multimeter.**
- **Voltage are dc with respect to ground unless otherwise noted.**
- **Voltage variations may be noted due to normal production tolerances.**
- **All voltages are in V.**
- *** : Cannot be measured.**
- **Circled numbers are waveform references.**
- **: B + bus.**
- **: B – bus.**
- ⇨ **: signal path.**

Reference information

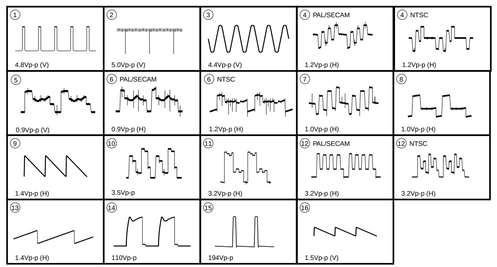
RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ※	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The component identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

A BOARD IC001 CXP86461-622S (FOR ME)
A BOARD IC001 CXP86461-623S (EXCEPT ME)



A BOARD WAVEFORMS



KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

A BOARD

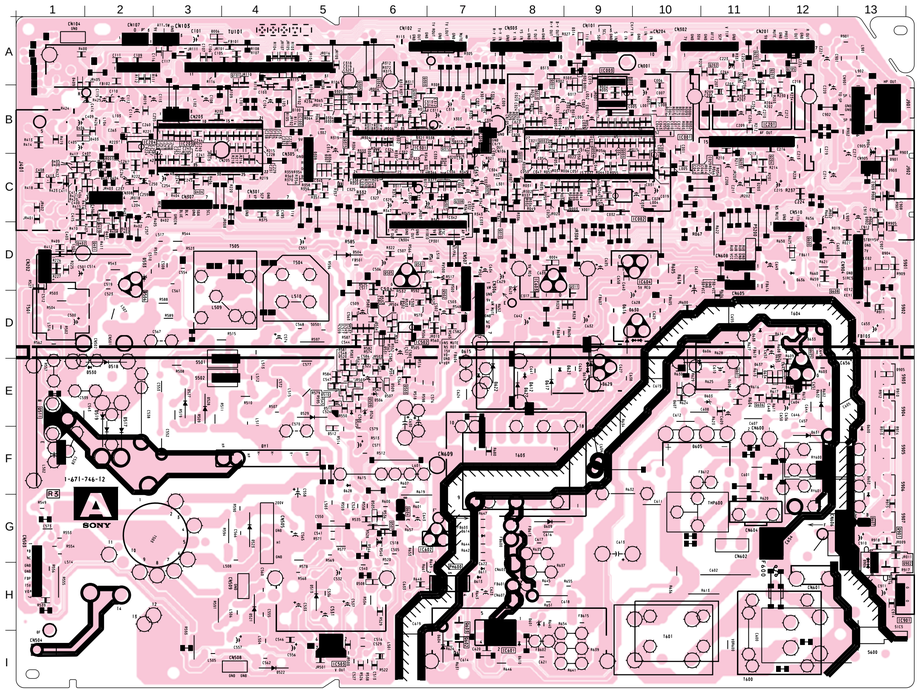
IC		D004	D-8	D614	H-7
		D005	B-8	D615	E-7
IC001	B-10	D006	A-3	D616	E-9
IC002	C-9	D203	C-11	D617	F-8
IC003	A-9	D300	A-9	D618	F-9
IC100	B-5	D301	B-9	D620	D-8
IC201	B-11	D302	B-6	D621	F-8
IC203	C-3	D303	B-5	D622	F-7
IC204	B-2	D304	B-5	D623	F-12
IC301	B-6	D305	B-5	D624	F-12
IC502	E-6	D306	C-5	D625	D-12
IC503	J-5	D307	C-5	D627	F-8
IC601	I-8	D308	B-5	D628	G-5
IC602	H-6	D309	B-6	D629	F-9
IC603	D-8	D310	A-6	D630	E-9
IC604	D-10	D311	C-6	D631	G-12
IC901	I-13	D312	C-6	D632	F-12
PH600	H-7	D313	A-8	D633	E-12
		D315	B-7	D634	F-11
TRANSISTOR		D316	C-7	D635	F-12
		D317	B-9	D636	D-12
Q001	B-8	D314	A-9	D637	F-11
Q002	B-8	D319	C-6	D638	E-11
Q003	C-9	D320	C-6	D901	C-13
Q004	C-9	D321	B-6	D902	D-13
Q101	A-4	D401	D-2	D903	C-13
Q201	A-11	D402	C-3	D904	D-13
Q202	A-11	D403	B-1	D905	F-13
Q203	C-11	D404	C-2	D906	I-13
Q204	C-11	D405	C-1		
Q205	A-12	D406	B-1		
Q206	A-11	D407	C-2		
Q207	A-11	D408	C-1		
Q301	B-8	D409	A-1		
Q302	A-6	D504	D-5		
Q303	A-6	D505	H-6		
Q304	B-6	D506	F-6		
Q305	B-5	D507	F-6		
Q306	B-5	D508	I-5		
Q307	C-7	D509	E-6		
Q308	C-7	D510	F-5		
Q309	C-7	D511	F-5		
Q310	D-7	D512	G-5		
Q311	D-9	D513	I-5		
Q312	B-7	D517	F-2		
Q313	B-8	D518	F-2		
Q315	B-5	D519	F-2		
Q401	D-2	D520	E-5		
Q402	D-1	D521	I-4		
Q403	D-2	D522	J-4		
Q404	C-3	D525	F-5		
Q501	D-6	D526	F-6		
Q502	E-7	D527	F-3		
Q503	F-6	D528	F-3		
Q505	D-6	D529	F-5		
Q506	D-2	D530	F-2		
Q507	H-6	D531	E-6		
Q509	F-6	D532	E-6		
Q511	F-1	D533	D-2		
Q600	C-12	D534	E-6		
Q601	F-11	D600	G-13		
Q602	J-7	D601	I-8		
Q603	I-7	D602	G-13		
Q604	H-6	D603	F-11		
Q605	E-12	D604	J-7		
Q606	F-11	D605	G-10		
Q607	H-13	D606	E-11		
Q901	H-13	D607	F-10		
Q902	H-13	D608	E-11		
		D609	H-8		
DIODE		D610	J-8		
		D611	I-7		
D001	B-8	D612	F-8		
D002	C-8	D613	I-7		
D003	C-9				

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

PRINTED WIRING BOARD

A [POWER SUPPLY, HV, MICON, Y/C JUNGLE]

– A Board –



KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70
RM-952

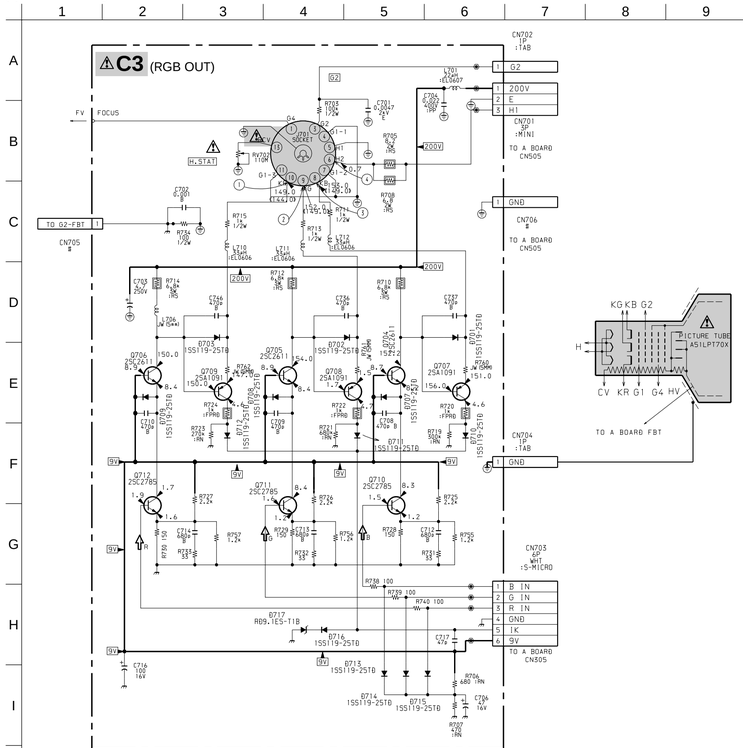
A BOARD ✻ MARK LIST

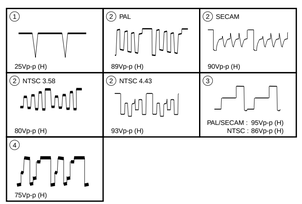
	KV-PF21L70 (ME)	KV-PF21M40 (GE)	KV-PF21M70 (E)	KV-PF21M70 (ME)	KVPF21P10 (OCE)	KV-PF21M40 (Singapore)	PF21P40 (Malaysia)	KV-PF21P41 (Malaysia)	KV-PF21Q70 (ME)
C307	18p :CHIP	18p :CHIP	18p :CHIP	18p :CHIP	18p :CHIP	18p :CHIP	18p :CHIP	18p :CHIP	#
C622	0.0015	#	#	0.0015	0.0015	0.0015	0.0015	#	0.0015
C624	1500P 2KV	#	#	1500P 2KV	1500P 2KV	1500P 2KV	1500P 2KV	#	1500P 2KV
CN 301	#	#	#	#	#	#	#	7P	#
CN 307	#	#	#	#	#	#	#	7P	#
IC 001	CXP86449-622S	CXP86449-623S	CXP86449-623S	CXP86449-622S	CXP86449-623S	CXP86449-623S	CXP86449-623S	CXP86449-623S	CXP86449-622S
R 375	#	#	#	#	#	#	#	CHIP 100	#
TU 101	BTF-LG411	BTF-LG433	BTF-LG433	BTF-LG433	BTF-LG411	BTF-LG411	BTF-LG411	BTF-LG411	BTF-LG411
X 302	CTYSTAL	CTYSTAL	CTYSTAL	CTYSTAL	CTYSTAL	CTYSTAL	CTYSTAL	CTYSTAL	#

Note) The parts indicated as "#" in this circuit diagram are not listed here, as they are not used in this models.

NOTE:
The circuit indicated at left contains high voltage of over 600 Vp-p. Please pay attention when inspecting or repairing it to prevent an electric shock.

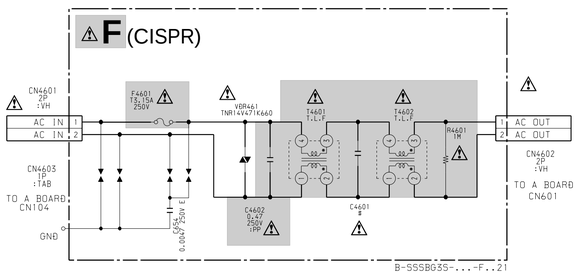
(3) Schematic Diagrams of C3 and F boards



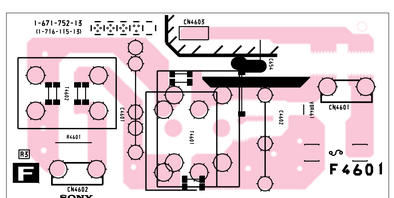

C3 BOARD WAVEFORMS
① 25Vp-p (H)
② PAL 89Vp-p (H)
② SECAM 90Vp-p (H)
② NTSC 3.58 80Vp-p (H)
② NTSC 4.43 93Vp-p (H)
③ PAL/SECAM : 95Vp-p (H) NTSC : 86Vp-p (H)
④ 75Vp-p (H)

F [CISPR] **C3** [RGB OUT]

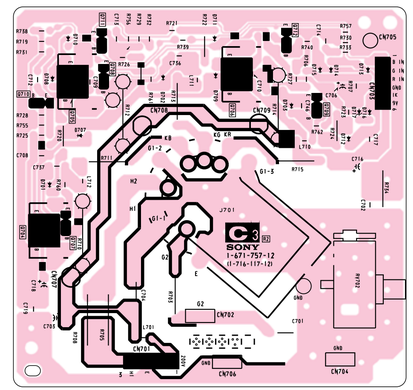
PRINTED WIRING BOARD



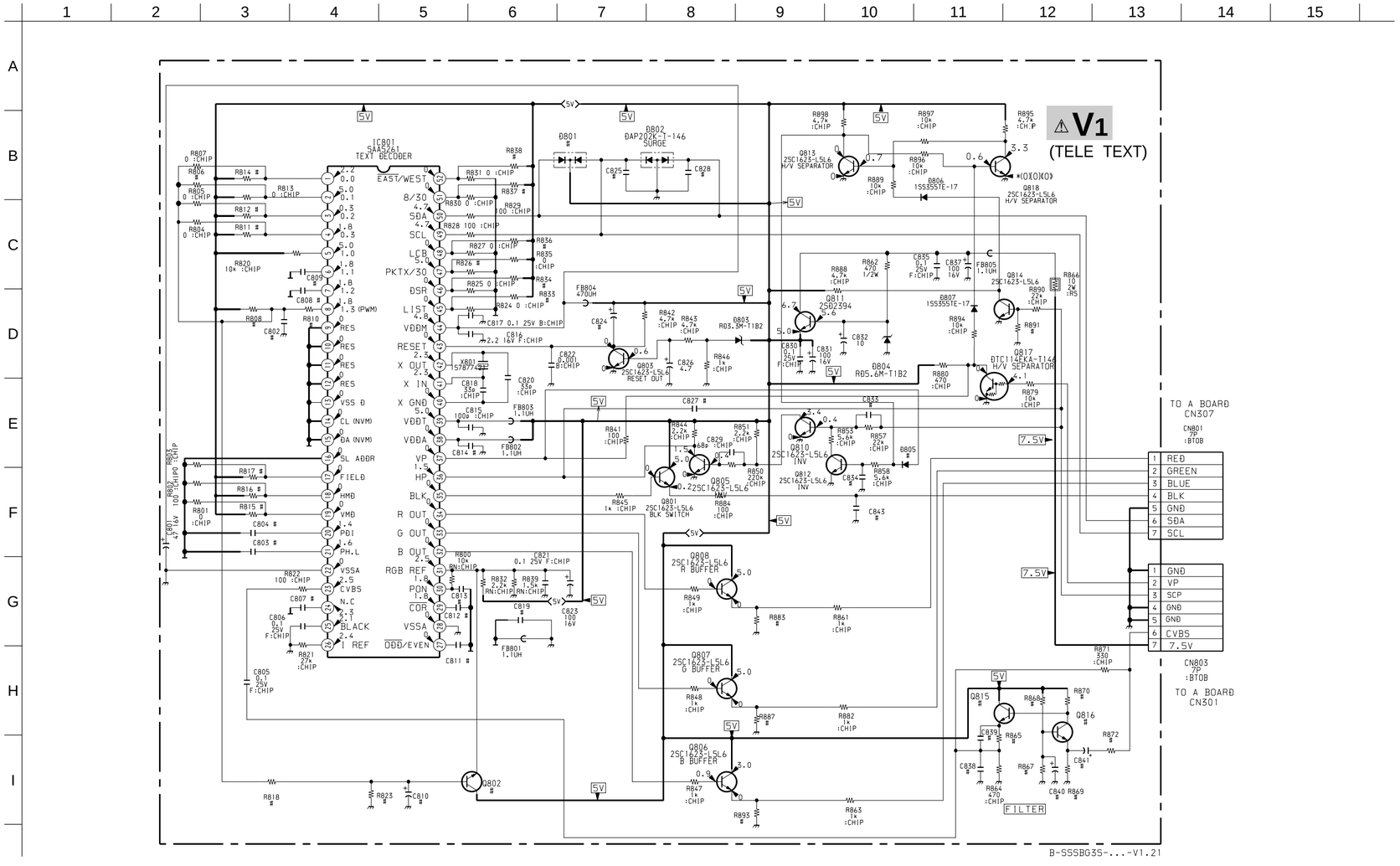
– F Board –



– C3 Board –

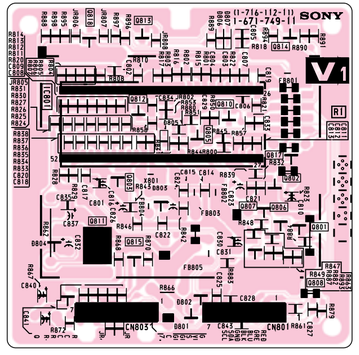


(4) Schematic Diagrams of V1 board



PRINTED WIRING BOARD V1 [TELE TEXT]

– V1 Board – (KV-PF21P41 only)

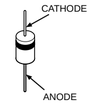


Schematic diagram
← V1 board

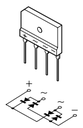
5-5. SEMICONDUCTORS

DIODE

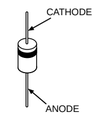
AU-01Z-V1
EL1Z
GP08D
RD33EB3T
RGP02-17EL-6433



D4SB60L

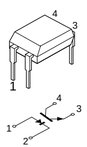


ERC04-06SE
RN4Z
RS 3FS
31DQ06-FC5

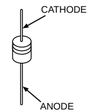


ERD29-08J

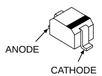
ON3171-R



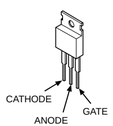
D1NS4
RD1.1ES-L2
RD20ES-B2
RD30ESB2
RD6.8ES-B1
1SS119-25
11EQS04
11ES2-NTA2B



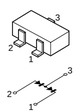
DTZ-TT11-15B
DTZ-10B
MA 111-(K8).SO
UDZS-TE17-5.1B
UDZS-TE17-6.8B
1SS355TE-17



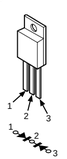
5P6M



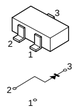
DA204K



FMU-G26S

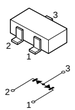


RD3.3M-B2
RD5.6M-B2



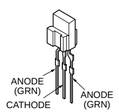
EG01CV0

DAP020K



LED

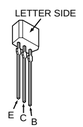
SPB-26MVWF



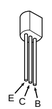
TRANSISTOR

DTC114EK
UN2111
UN2211
UN2213
UN2216
2SC1623-L5L6
2SC2712-YG

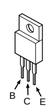
2SC2785-HFE



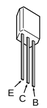
2SA1091-O



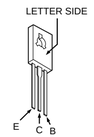
2SD2394-EF



2SD2144S-UVW



2SC2611

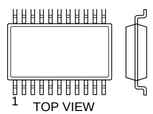


IC

CXA2130S (64PIN)
CXP86449-622S (64PIN)
CXP86449-623S (64PIN)
TDA7429S (42PIN)

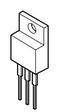
Dual In-line Package
Pin 6—98

MM1319AFBE (7PIN)
NJM2903M (8PIN)



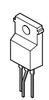
Single In -line Package
Pin 6—98

NJM78M09FA
TA7805S

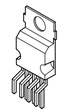


SBX1981-51

SE-135N

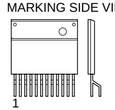


TDA8172



STR-F6654

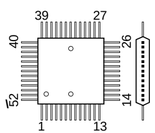
MARKING SIDE VIEW



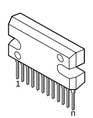
Zig-zag In -line Package
Pin 6—99

RU-1P

MARKING SIDE
VIEW



TA8248K



SECTION 6
EXPLODED VIEW

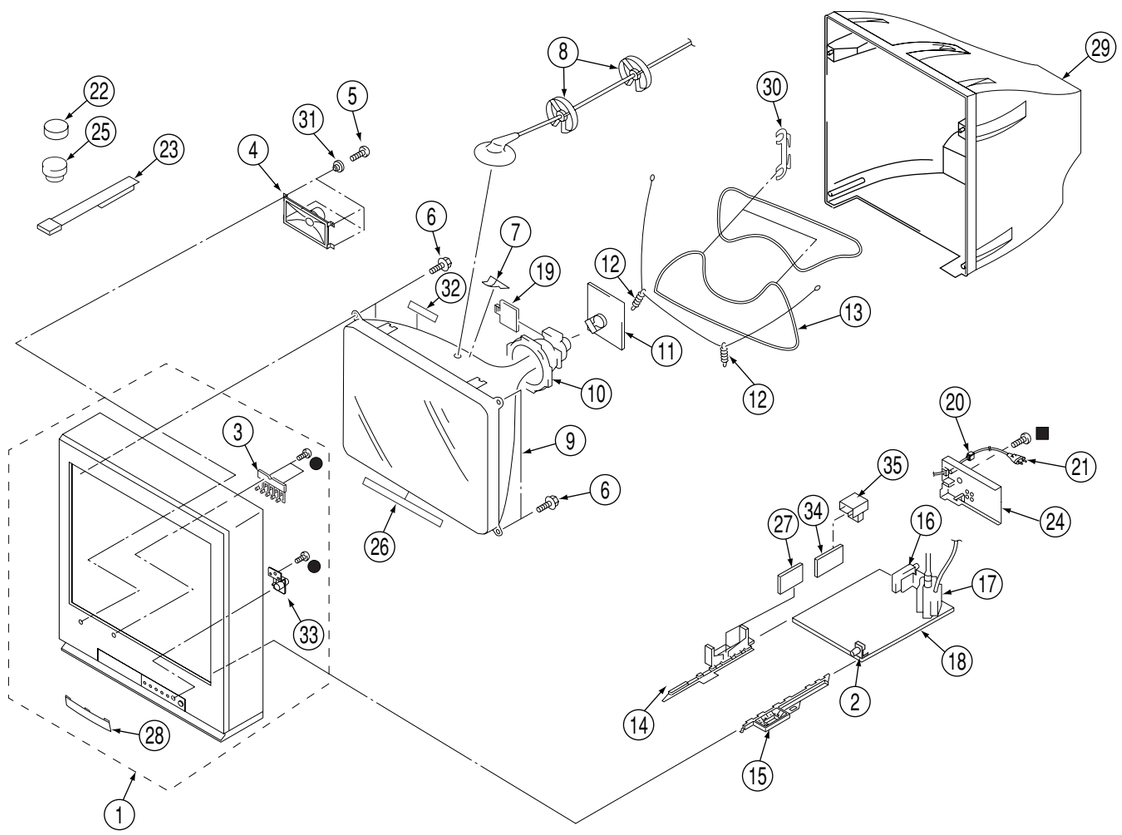
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

6-1. CHASSIS

●: BVTP 3 × 12 7-685-648-79
■: BVTP 4 × 16 7-685-663-71
NOTE : The picture tube for OCE model is upside down, and the positon for the anode cap and tension springs are changed accordingly.



KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70

RM-952

REF. NO.		PART NO.	DESCRIPTION	REMARK
1		X-4036-748-2	BEZNET ASSY (KV-PF21P41)	3,28,33
		X-4036-758-1	BEZNET ASSY (KV-PF21L70)	3,28,33
		X-4036-758-3	BEZNET.ASSY (KV-PF21Q70)	3,28,33
		X-4036-748-1	BEZNET.ASSY (KV-PF21M40/ PF21M70)	3,28,33
		X-4036-748-3	BEZNET.ASSY (KV-PF21P10/PF21P40)	3,28,33
2		4-070-291-01	BUTTON, POWER (KV-PF21M40)	
		4-070-291-11	BUTTON, POWER (KV-PF21L70/ PF21Q70/PF21M70/PF21P10/PF21P40)	
3		4-070-290-01	BUTTON, MULTI (Except KV-PF21Q70)	
		4-070-290-11	BUTTON, MULTI (KV-PF21Q70)	
4		1-505-740-11	SPEAKER (5X9CM)	
5		4-054-981-01	SCREW, STEP TAPPING	
6		4-365-808-01	SCREW (5), TAPPING	
7		4-046-600-11	SPACER, DY	
8	*	3-704-372-11	HOLDER, HV CABLE (Except KV-PF21P10)	
9	⚠	8-738-812-05	PICTURE TUBE (A51LPT70X) (KV-PF21M40/PF21P40/PF21P41)	
	⚠	8-738-809-05	PICTURE TUBE (A51LPT70X) (KV-PF21L70/PF21M70/PF21P10/PF21Q70)	
10		8-451-505-11	DEFLCETION YOKE (Y21RSA-S) (Except KV-PF21P10)	
	⚠	8-451-505-11	DEFLCETION YOKE (Y21RSA-S) (KV-PF21P10)	
11	*	A-1331-884-A	C3 BOARD, MOUNTED	
12		4-369-318-61	SPRING, TENSION	
13	⚠	1-416-946-21	COIL, DEMAGNETIC	
14	*	4-067-189-01	PWB(L), GUIDE	
15	*	4-067-187-01	PWB(R), GUIDE	
16	*	8-598-447-00	TUNER, FSS BTF-LG411 (Except KV-PF21M40/M70)	
	*	8-598-447-10	TUNER, FSS BTF-LG433 (KV-PF21M40/M70)	
17	⚠*	1-453-293-11	TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) (Except KV-PF21M70(ME))	
	⚠	1-453-298-11	TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) (KV-PF21M70(ME))	

REF. NO.		PART NO.	DESCRIPTION	REMARK
18	*	A-1299-010-A	A BOARD, COMPLETE (KV-PF21P41)	
		A-1298-989-A	A BOARD, COMPLETE (KV-PF21P10/ P40(MALAYSIA)	
		A-1298-979-A	A BOARD, COMPLETE (KV-PF21L70)	
		A-1298-978-A	A BOARD, COMPLETE (KV-PF21Q70)	
		A-1298-996-A	A BOARD, COMPLETE (KV-PF21M70(ME))	
		A-1298-975-A	A BOARD, COMPLETE (KV-PF21P40(SINGAPORE)	
		A-1299-009-A	A BOARD, COMPLETE (KV-PF21M40)	
		A-1299-007-A	A BOARD, COMPLETE (KV-PF21M70(E))	
19		4-057-714-01	PIECE ASSY, TLH CORRECTION	
20		4-022-115-00	HOLDER, AC CORD	
21	⚠	1-574-062-11	CORD, POWER (WITH CONNECTOR) 2.5A/250V (Except KV-PF21P10)	
	⚠	1-574-358-11	CORD, POWER (WITH CONNECTOR) 7.5A/250V (KV-PF21P10)	
22		1-452-032-00	MAGNET,DISC	
23		4-051-736-21	PIECE A(90), CONV. CORRECT	
24		4-067-167-21	BRACKET,TERMINAL	
25		1-452-094-00	CIRCULAR DISC MAGNET B	
26		4-069-651-02	BLOTTING SHEET (except KV-PF21L70/Q70)	
		4-069-651-01	BLOTTING SHEET (KV-PF21L70/Q70)	
27	*	A-1241-355-A	F BOARD, MOUNTED	
28		X-4036-750-2	DOOR ASSY, CONTROL (KV-PF21P41)	
		X-4036-753-1	DOOR ASSY, CONTROL (KV-PF21L70)	
		X-4036-750-1	DOOR ASSY, CONTROL (KV-PF21M40/M70)	
		X-4036-753-3	DOOR ASSY, CONTROL (KV-PF21Q70)	
29	⚠	4-070-300-01	COVER, REAR	
30		4-064-883-11	HOLDER, DGC	
31	*	4-379-189-11	CUSHION, SPEAKER	
32		4-069-652-02	CUSHION (HS BAND)	
33	*	4-070-292-01	BAR, OPTICAL	
34	*	A-1347-155-A	V1 BOARD, COMPLETE (KV-PF21P41 only)	
35	*	4-068-953-02	BRACKET, V1 (KV-PF21P41 only)	
36		3-704-372-11	HOLDER, HV CABE (KV-PF21P10)	

RM-952

A

SECTION 7
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- All resistors are in ohms
- F : nonflammable

CAPACITORS
- MF : µF, PF : µµF

COILS
- MMH : mH, UH : µH

REF.NO.	PART NO.	DESCRIPTION	REMARK
	* A-1298-979-A	A BOARD COMPLETE (KV-PF21L70)	
		**********	
	* A-1299-009-A	A BOARD COMPLETE (KV-PF21M40)	
		**********	
	* A-1299-007-A	A BOARD COMPLETE (KV-PF21M70(E))	
		**********	
	* A-1298-996-A	A BOARD COMPLETE (KV-PF21M70(ME))	
		**********	
	* A-1298-989-A	A BOARD COMPLETE (KV-PF21P10/PF21P40(MALAYSIA))	
		**********	
	* A-1298-975-A	A BOARD COMPLETE (KV-PF21P40(SINGAPORE))	
		**********	
	* A-1299-010-A	A BOARD COMPLETE (KV-PF21P41)	
		**********	
	* A-1298-978-A	A BOARD COMPLETE (KV-PF21Q70)	
		**********	
	* 4-055-304-01	HOLDER, LED	
	* 4-067-182-02	HOLDER, FBT	
	4-382-854-11	SCREW (M3X10), P, SW (+)	
	4-382-854-21	SCREW (M3X14), P, SW (+)	
	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3	
		<<CAPACITOR>	
C003	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C004	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C005	1-163-001-11	CERAMIC CHIP 220PF 10% 50V	
C006	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C007	1-104-664-11	ELECT 47MF 20% 16V	
C008	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C010	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C012	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C013	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C014	1-104-664-11	ELECT 47MF 20% 25V	
C015	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C016	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	
C017	1-163-113-00	CERAMIC CHIP 68PF 5% 50V	
C019	1-104-664-11	ELECT 47MF 20% 25V	
C022	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C023	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C024	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	
C026	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C027	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C028	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C030	1-126-965-11	ELECT 22MF 20% 50V	
C031	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C032	1-107-823-11	CERAMIC CHIP 0.47MF 10% 16V	
C034	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C041	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C042	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C043	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C044	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C047	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C048	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C050	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C051	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C053	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C054	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C055	1-163-251-11	CERAMIC CHIP 100PF 5% 50V	
C103	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C104	1-104-665-11	ELECT 100MF 20% 10V	
C107	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C108	1-104-664-11	ELECT 47MF 20% 16V	
C109	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C110	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C111	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C112	1-104-664-11	ELECT 47MF 20% 16V	
C113	1-104-664-11	ELECT 47MF 20% 25V	
C114	1-126-967-11	ELECT 47MF 20% 50V	
C202	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C204	1-130-481-00	MYLAR 0.0068MF 5% 50V	
C206	1-164-182-11	CERAMIC CHIP 0.0033MF 10% 50V	
C209	1-126-964-11	ELECT 10MF 20% 50V	
C210	1-126-933-11	ELECT 100MF 20% 16V	
C211	1-126-941-11	ELECT 470MF 20% 25V	
C212	1-126-933-11	ELECT 100MF 20% 16V	
C215	1-126-942-61	ELECT 1000MF 20% 25V	
C216	1-163-021-91	CERAMIC CHIP 0.01MF 10% 50V	
C218	1-136-167-00	FILM 0.15MF 5% 50V	
C220	1-126-942-61	ELECT 1000MF 20% 25V	
C221	1-126-964-11	ELECT 10MF 20% 50V	
C223	1-126-965-11	ELECT 22MF 20% 50V	
C224	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C226	1-109-982-11	CERAMIC CHIP 1MF 10% 10V	
C227	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C228	1-163-024-00	CERAMIC CHIP 0.018MF 10% 50V	
C229	1-163-018-00	CERAMIC CHIP 0.0056MF 10% 50V	
C230	1-163-024-00	CERAMIC CHIP 0.018MF 10% 50V	
C231	1-163-018-00	CERAMIC CHIP 0.0056MF 10% 50V	
C232	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C233	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C234	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C235	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C236	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C238	1-164-505-11	CERAMIC CHIP 2.2MF 16V	
C240	1-164-505-11	CERAMIC CHIP 2.2MF 16V	

KV-PF21L70/PF21M40/PF21M70/PF21P10
KV-PF21P40/PF21P41/PF21Q70

RM-952

A

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
C241	1-164-346-11	CERAMIC CHIP 1MF 16V	
C242	1-164-505-11	CERAMIC CHIP 2.2MF 16V	
C243	1-216-295-91	SHORT 0	
C244	1-164-700-11	CERAMIC CHIP 0.68MF 16V	
C245	1-164-346-11	CERAMIC CHIP 1MF 16V	
C246	1-163-018-00	CERAMIC CHIP 0.0056MF 10% 50V	
C248	1-163-010-11	CERAMIC CHIP 0.0012MF 10% 50V	
C249	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C251	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C252	1-164-346-11	CERAMIC CHIP 1MF 16V	
C253	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C254	1-126-965-11	ELECT 22MF 20% 50V	
C255	1-163-037-11	CERAMIC CHIP 0.022MF 10% 50V	
C256	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C259	1-126-933-11	ELECT 100MF 20% 16V	
C265	1-164-505-11	CERAMIC CHIP 2.2MF 16V	
C301	1-126-935-11	ELECT 470MF 20% 16V	
C302	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C303	1-126-964-11	ELECT 10MF 20% 50V	
C304	1-126-967-11	ELECT 47MF 20% 50V	
C305	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C306	1-163-233-11	CERAMIC CHIP 18PF 5% 50V	
C307	1-163-233-11	CERAMIC CHIP 18PF 5% 50V (Except KV-PF21Q70)	
C308	1-163-259-91	CERAMIC CHIP 220PF 5% 50V	
C309	1-126-957-11	ELECT 0.22MF 20% 50V	
C310	1-126-963-11	ELECT 4.7MF 20% 50V	
C311	1-126-964-11	ELECT 10MF 20% 50V	
C312	1-164-346-11	CERAMIC CHIP 1MF 16V	
C313	1-164-346-11	CERAMIC CHIP 1MF 16V	
C315	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C316	1-104-664-11	ELECT 47MF 20% 25V	
C317	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C318	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C319	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C320	1-163-031-11	CERAMIC CHIP 0.01MF 50V	
C322	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C324	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C325	1-126-960-11	ELECT 1MF 20% 50V	
C327	1-126-965-11	ELECT 22MF 20% 50V	
C328	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C330	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C332	1-126-963-11	ELECT 4.7MF 20% 50V	
C335	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C336	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C337	1-126-961-11	ELECT 2.2MF 20% 50V	
C338	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C341	1-115-340-11	CERAMIC CHIP 0.22MF 10% 25V	
C342	1-163-259-91	CERAMIC CHIP 220PF 5% 50V	
C402	1-164-346-11	CERAMIC CHIP 1MF 16V	
C404	1-163-005-11	CERAMIC CHIP 470PF 10% 50V	
C405	1-126-935-11	ELECT 470MF 20% 16V	
C407	1-164-346-11	CERAMIC CHIP 1MF 16V	
C408	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C409	1-126-963-11	ELECT 4.7MF 20% 50V	
C502	1-163-145-00	CERAMIC CHIP 0.0015MF 5% 50V	
C506	1-107-638-11	ELECT 33MF 20% 160V	
C507	1-161-830-00	CERAMIC 0.0047MF 500V	
C510	1-102-112-00	CERAMIC 330PF 10% 50V	
C512	1-163-989-11	CERAMIC CHIP 0.033MF 10% 25V	
C513	1-163-263-11	CERAMIC CHIP 330PF 5% 50V	
C514	1-106-383-00	MYLAR 0.047MF 10% 200V	
C517	1-164-182-11	CERAMIC CHIP 0.0033MF 10% 50V	
C518	1-104-665-11	ELECT 100MF 20% 10V	
C519	1-102-212-00	CERAMIC 820PF 10% 500V	
C521	1-126-934-11	ELECT 220MF 20% 16V	
C522	1-126-933-11	ELECT 100MF 20% 16V	
C523	1-102-002-00	CERAMIC 680PF 10% 500V	
C524	1-126-967-11	ELECT 47MF 20% 50V	
C526	1-130-495-00	MYLAR 0.1MF 5% 50V	
C527	1-102-820-00	CERAMIC 330PF 5% 50V	
C528	1-162-134-11	CERAMIC 470PF 10% 2KV	
C530	1-137-372-11	FILM 0.022MF 5% 50V	
C531	1-126-961-11	ELECT 2.2MF 20% 50V	
C532	1-126-941-11	ELECT 470MF 20% 25V	
C533	1-126-941-11	ELECT 470MF 20% 25V	
C536	1-136-165-00	FILM 0.1MF 5% 50V	
C537	1-126-969-11	ELECT 220MF 20% 50V	
C538	1-136-076-00	FILM 0.0085MF 3% 2KV	
C539	1-129-746-91	FILM 0.039MF 5% 400V	
C540	1-136-171-00	FILM 0.33MF 5% 50V	
C546	1-165-319-11	CERAMIC CHIP 0.1MF 50V	
C549	1-163-017-00	CERAMIC CHIP 0.0047MF 10% 50V	
C550	1-106-220-00	MYLAR 0.1MF 10% 100V	
C551	1-126-960-11	ELECT 1MF 20% 50V	
C552	1-162-116-00	CERAMIC 680PF 10% 2KV	
C553	1-162-116-00	CERAMIC 680PF 10% 2KV	
C554	1-137-417-11	MYLAR 0.0047MF 10% 200V	
C556	1-126-941-11	ELECT 470MF 20% 25V	
C557	1-126-941-11	ELECT 470MF 20% 25V	
C558	1-123-024-21	ELECT 33MF 160V	
C560	1-102-228-00	CERAMIC 470PF 10% 500V	
C561	1-136-557-11	FILM 0.0033MF 5% 630V	
C562	1-102-228-00	CERAMIC 470PF 10% 500V	
C564	1-163-038-91	CERAMIC CHIP 0.1MF 25V	
C565	1-107-655-11	ELECT 47MF 20% 250V	
C566	1-102-244-00	CERAMIC 220PF 10% 500V	
C567	1-115-521-11	FILM 0.82MF 5% 250V	
C568	1-102-228-00	CERAMIC 470PF 10% 500V	
C570	1-115-520-11	FILM 0.68MF 5% 250V	
C573	1-106-379-12	MYLAR 0.033MF 10% 200V	
C574	1-107-636-11	ELECT 10MF 20% 160V	
C576	1-130-495-00	MYLAR 0.1MF 5% 50V	
C577	1-106-395-00	MYLAR 0.15MF 10% 200V	
C582	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C586	1-216-295-91	SHORT 0	
C600 ⚠	1-104-705-51	FILM 0.1MF 20% 250V	
C602 ⚠	1-104-705-51	FILM 0.1MF 20% 250V	
C604	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C605 ⚠	1-127-942-51	CERAMIC 330PF 10% 250V	
C606 ⚠	1-127-942-51	CERAMIC 330PF 10% 250V	
C607	1-161-830-00	CERAMIC 0.0047MF 99% 500V	
C608	1-161-830-00	CERAMIC 0.0047MF 99% 500V	
C609	1-126-968-11	ELECT 100MF 20% 50V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.		PART NO.	DESCRIPTION			REMARK
C610		1-126-964-11	ELECT	10MF	20%	50V
C610		8-719-210-21	DIODE 11EQS04			
C611		1-161-830-00	CERAMIC	0.0047MF	99%	500V
C612		1-161-830-00	CERAMIC	0.0047MF	99%	500V
C613		1-117-752-11	ELECT(BLOCK)	330MF	20%	450V
C614		1-126-964-11	ELECT	10MF	20%	50V
C616		1-130-202-00	FILM	0.022MF	10%	400V
C617		1-107-792-11	CERAMIC	100PF	5%	1KV
C618		1-125-893-11	FILM	680PF	3%	1.5KV
C619	⚠	1-119-886-51	CERAMIC	470PF	10%	250V
C620		1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C621		1-102-114-00	CERAMIC	470PF	10%	50V
C622		1-102-119-00	CERAMIC	0.0015MF	10%	50V
			(Except KV-PF21M40/PFM70(E)/PF21P41)			
C623		1-104-665-11	ELECT	100MF	20%	25V
C624		1-125-772-91	CERAMIC	1500PF	10%	2KV
			(Except KV-PF21M40/PF21M70(E)/PF21P41)			
C627		1-102-002-00	CERAMIC	680PF	10%	500V
C628		1-126-942-61	ELECT	1000MF	20%	25V
C629		1-126-964-11	ELECT	10MF	20%	50V
C630		1-123-024-21	ELECT	33MF		160V
C633		1-104-999-11	MYLAR	0.1MF	10%	200V
C634		1-126-933-11	ELECT	100MF	20%	16V
C635		1-104-665-11	ELECT	100MF	20%	10V
C636		1-104-760-11	CERAMIC CHIP	0.047MF	10%	50V
C639		1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C640		1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C641		1-102-002-00	CERAMIC	680PF	10%	500V
C642		1-126-943-11	ELECT	2200MF	20%	25V
C643		1-104-665-11	ELECT	100MF	20%	10V
C644		1-104-331-11	CERAMIC	0.0022MF	10%	1KV
C645		1-137-605-11	FILM	0.01MF	10%	250V
C646		1-107-679-91	ELECT	10MF	20%	450V
C647		1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C649		1-126-940-11	ELECT	330MF	20%	25V
C650		1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C651		1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C652		1-126-965-11	ELECT	22MF	20%	50V
C653		1-104-664-11	ELECT	47MF	20%	25V
C657		1-101-821-00	CERAMIC	0.0022MF		500V
C658		1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C901		1-136-153-00	FILM	0.01MF	5%	50V
C905		1-126-963-11	ELECT	4.7MF	20%	50V
C906		1-164-346-11	CERAMIC CHIP	1MF		16V
C907		1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C910		1-126-967-11	ELECT	47MF	20%	50V
C911		1-126-967-11	ELECT	47MF	20%	50V
C912		1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C913		1-104-665-11	ELECT	100MF	20%	10V
C914		1-163-133-00	CERAMIC CHIP	470PF	5%	50V
			<<CONNECTOR>			
CN104		1-695-915-11	TAB (CONTACT)			
CN202	*	1-785-608-11	PIN, CONNECTOR 4P			
CN203	*	1-564-506-11	PLUG, CONNECTOR 3P			
CN204	*	1-564-506-11	PLUG, CONNECTOR 3P			
CN301	*	1-774-813-11	CONNECTOR, BOARD TO BOARD 7P			
			(KV-PF21P41 only)			

REF. NO.		PART NO.	DESCRIPTION			REMARK
CN305	*	1-564-509-11	PLUG, CONNECTOR 6P			
CN307	*	1-774-813-11	CONNECTOR, BOARD TO BOARD 7P			
			(KV-PF21P41 only)			
CN505		1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			
CN506		4-352-844-01	PIN, LEAD, COATING			
CN601	*	1-580-843-11	PIN, CONNECTOR (POWER)			
CN602	*	1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P			
CN604	*	1-573-963-11	PIN, CONNECTOR (PC BOARD) 3P			
CN609	*	1-508-784-21	PIN, CONNECTOR (5MM PITCH) 1P			
CN901	*	1-564-506-11	PLUG, CONNECTOR 3P			
			<<DIODE>			
D001		8-719-988-61	DIODE 1SS355TE-17			
D005		8-719-988-61	DIODE 1SS355TE-17			
D006		8-719-988-61	DIODE 1SS355TE-17			
D203		8-719-914-42	DIODE DA204K			
D300		1-216-295-91	SHORT	0		
D301		8-719-988-61	DIODE 1SS355TE-17			
D306		8-719-988-61	DIODE 1SS355TE-17			
D307		8-719-988-61	DIODE 1SS355TE-17			
D308		8-719-988-61	DIODE 1SS355TE-17			
D309		8-719-069-54	DIODE UDZS-TE17-5.1B			
D311		8-719-988-61	DIODE 1SS355TE-17			
D312		8-719-988-61	DIODE 1SS355TE-17			
D313		8-719-988-61	DIODE 1SS355TE-17			
D314		8-719-988-61	DIODE 1SS355TE-17			
D315		8-719-988-61	DIODE 1SS355TE-17			
D316		8-719-069-57	DIODE UDZS-TE17-6.8B			
D320		8-719-069-60	DIODE UDZS-TE17-9.1B			
D321		8-719-069-60	DIODE UDZS-TE17-9.1B			
D402		8-719-069-60	DIODE UDZS-TE17-9.1B			
D403		8-719-069-60	DIODE UDZS-TE17-9.1B			
D405		8-719-069-60	DIODE UDZS-TE17-9.1B			
D406		8-719-069-60	DIODE UDZS-TE17-9.1B			
D504		8-719-302-43	DIODE EL1Z			
D505		8-719-988-61	DIODE 1SS355TE-17			
D506		8-719-911-19	DIODE 1SS119-25			
D507		8-719-988-61	DIODE 1SS355TE-17			
D508		8-719-988-61	DIODE 1SS355TE-17			
D509		1-216-073-00	RES,CHIP	10K	5%	1/10W
D510		8-719-988-61	DIODE 1SS355TE-17			
D511		8-719-988-61	DIODE 1SS355TE-17			
D512		8-719-988-61	DIODE 1SS355TE-17			
D513		8-719-908-03	DIODE GP08D			
D517		8-719-312-71	DIODE RS3FS			
D518		8-719-900-26	DIODE ERD29-08J			
D521		8-719-302-43	DIODE EL1Z			
D522		8-719-302-43	DIODE EL1Z			
D523		8-719-302-43	DIODE EL1Z			
D527		8-719-908-03	DIODE GP08D			
D528		8-719-908-03	DIODE GP08D			
D531		8-719-988-61	DIODE 1SS355TE-17			
D532		8-719-988-61	DIODE 1SS355TE-17			
D534		1-216-295-91	SHORT	0		
D602		8-719-911-19	DIODE 1SS119-25			
D603		8-719-150-92	DIODE RD33EB3T			
D604		8-719-028-72	DIODE RGP02-17EL-6433			

RM-952

A

REF. NO.		PART NO.	DESCRIPTION	REMARK
D605		8-719-510-53	DIODE D4SB60L	
D606		8-719-108-18	THYRISTOR 5P6M	
D607		8-719-073-01	DIODE MA111-(K8).S0	
D608		8-719-110-53	DIODE RD20ESB2	
D609		8-719-311-31	DIODE RU-1P	
D611		8-719-046-74	DIODE AU-01Z-V1	
D613		8-719-046-74	DIODE AU-01Z-V1	
D614		8-719-046-74	DIODE AU-01Z-V1	
D618		8-719-067-18	DIODE RN4Z	
D620		8-719-110-72	DIODE RD30ESB2	
D622		8-719-071-39	DIODE FMU-G26S	
D623		8-719-978-65	DIODE DTZ-TT11-15B	
D624		8-719-073-01	DIODE MA111-(K8).S0	
D625		8-719-977-28	DIODE DTZ10B	
D627		8-719-073-84	DIODE 31DQ06-FC5	
D628		8-719-911-19	DIODE 1SS119-25	
D631		8-719-068-00	DIODE ERC04-06SE	
D632		8-719-068-00	DIODE ERC04-06SE	
D633		8-719-030-25	DIODE EG01CV0	
D634		8-719-073-01	DIODE MA111-(K8).S0	
D635		8-719-073-01	DIODE MA111-(K8).S0	
D636		8-719-510-02	DIODE D1NS4	
D637		8-719-109-96	DIODE RD6.8ESB1	
D638		8-719-024-99	DIODE 11ES2-NTA2B	
D901		8-719-069-60	DIODE UDZS-TE17-9.1B	
D902		8-719-069-60	DIODE UDZS-TE17-9.1B	
D904		8-719-069-60	DIODE UDZS-TE17-9.1B	
D905		8-719-069-60	DIODE UDZS-TE17-9.1B	
D906		8-719-045-19	DIODE SPB-26MVWF	
			<<CONNECTOR>	
DY1	*	1-580-798-11	CONNECTOR PIN (DY) 6P	
			<<FERRITE BEAD>	
FB501		1-410-397-21	FERRITE 1.1UH	
FB502		1-410-397-21	FERRITE 1.1UH	
FB600		1-410-397-21	FERRITE 1.1UH	
FB601		1-410-397-21	FERRITE 1.1UH	
FB602		1-410-397-21	FERRITE 1.1UH	
FB603		1-410-397-21	FERRITE 1.1UH	
FB604		1-410-397-21	FERRITE 1.1UH	
FB607		1-410-397-21	FERRITE 1.1UH	
FB608		1-410-397-21	FERRITE 1.1UH	
FB611		1-410-397-21	FERRITE 1.1UH	
FB613		1-410-397-21	FERRITE 1.1UH	
FB615		1-410-397-21	FERRITE 1.1UH	
			<<IC>	
IC001		8-752-906-20	IC CXP86449-622S (KV-PF21L70/PF21Q70)/ M70(ME)	
IC001		8-752-906-21	IC CXP86449-623S (Except KV-PF21L70/PF21Q70/ M70(ME)	
IC002		8-759-371-21	IC MM1319AFBE	
IC003		8-759-527-71	IC M24C08-BN6	
IC201		8-759-339-60	IC TA8248K	
IC203		8-759-553-40	IC TDA7429S	
IC301		8-752-088-39	IC CXA2130S	
IC502		8-759-700-07	IC NJM2903M	
IC503		8-759-980-58	IC TDA8172	
IC601		8-749-013-75	IC STR-F6654	
IC602		8-749-920-61	IC SE-135N	
IC603		8-759-701-59	IC NJM78M09FA	
IC604		8-759-231-53	IC TA7805S	
IC901		8-742-014-11	HYB IC SBX1981-51	
			<<JACK>	
J401		1-779-849-11	JACK BLOCK, PIN 4P	
J901		1-770-785-11	JACK	
J902		1-779-205-11	JACK, PIN 2P	
			<<CHIP CONDUCTOR>	
JR001		1-216-295-91	SHORT 0	
JR002		1-216-295-91	SHORT 0	
JR003		1-216-295-91	SHORT 0	
JR004		1-216-295-91	SHORT 0	
JR005		1-216-295-91	SHORT 0	
JR006		1-216-295-91	SHORT 0	
JR007		1-216-295-91	SHORT 0	
JR008		1-216-295-91	SHORT 0	
JR009		1-216-295-91	SHORT 0	
JR010		1-216-295-91	SHORT 0	
JR011		1-216-295-91	SHORT 0	
JR012		1-216-295-91	SHORT 0	
JR013		1-216-295-91	SHORT 0	
JR014		1-216-295-91	SHORT 0	
JR015		1-216-295-91	SHORT 0	
JR016		1-216-295-91	SHORT 0	
JR018		1-216-295-91	SHORT 0	
JR019		1-216-295-91	SHORT 0	
JR102		1-216-295-91	SHORT 0	
JR109		1-216-295-91	SHORT 0	
JR202		1-216-295-91	SHORT 0	
JR301		1-216-295-91	SHORT 0	
JR303		1-216-295-91	SHORT 0	
JR404		1-216-295-91	SHORT 0	
JR405		1-216-295-91	SHORT 0	
JR500		1-216-295-91	SHORT 0	
JR501		1-216-295-91	SHORT 0	
JR503		1-216-295-91	SHORT 0	
JR600		1-216-295-91	SHORT 0	
			<<COIL>	
L002		1-414-856-11	INDUCTOR 10UH	
L003		1-414-180-11	INDUCTOR 3.3UH	
L005		1-414-233-22	INDUCTOR CHIP 0UH	
L101		1-414-856-11	INDUCTOR 10UH	
L102		1-414-856-11	INDUCTOR 10UH	
L103		1-414-856-11	INDUCTOR 10UH	
L104		1-414-856-11	INDUCTOR 10UH	
L105		1-414-856-11	INDUCTOR 10UH	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION		REMARK
L204	1-414-856-11	INDUCTOR	10UH	
L301	1-414-189-31	INDUCTOR	100UH	
L302	1-414-185-41	INDUCTOR	22UH	
L501	1-412-525-31	INDUCTOR	10UH	
L502	1-422-613-11	COIL, AIR CORE		
L503	1-412-525-31	INDUCTOR	10UH	
L504	1-412-525-31	INDUCTOR	10UH	
L505	1-412-525-31	INDUCTOR	10UH	
L506	1-412-525-31	INDUCTOR	10UH	
L507	1-459-111-00	INDUCTOR	10MMH	
L508	1-412-525-31	INDUCTOR	10UH	
L509	1-459-390-00	INDUCTOR	390UH	
L510	1-416-972-11	COIL, HORIZONTAL LINEARITY		
L512	1-412-549-31	INDUCTOR	1MMH	
L513	1-412-549-31	INDUCTOR	1MMH	
L515	1-459-104-00	COIL, WITH CORE		
L518	1-414-187-11	INDUCTOR	47UH	
L601	1-412-527-11	INDUCTOR	15UH	
L901	1-408-603-31	INDUCTOR	10UH	
L905	1-414-856-11	INDUCTOR	10UH	
		<<PHOTO COUPLER>		
PH600 ⚠	8-749-010-64	PHOTO COUPLER PC123F2		
		<<IC LINK>		
PS200	1-532-675-21	LINK, IC 1.5A/150V		
		<<TRANSISTOR>		
Q002	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q003	8-729-424-08	TRANSISTOR UN2111		
Q004	8-729-421-22	TRANSISTOR UN2211		
Q101	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q201	8-729-424-67	TRANSISTOR UN2216		
Q203	8-729-421-19	TRANSISTOR UN2213		
Q204	8-729-216-22	TRANSISTOR 2SA1162-G		
Q206	8-729-421-19	TRANSISTOR UN2213		
Q207	8-729-421-19	TRANSISTOR UN2213		
Q301	8-729-216-22	TRANSISTOR 2SA1162-G		
Q302	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q303	8-729-216-22	TRANSISTOR 2SA1162-G		
Q305	8-729-216-22	TRANSISTOR 2SA1162-G		
Q306	8-729-216-22	TRANSISTOR 2SA1162-G		
Q307	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q308	8-729-216-22	TRANSISTOR 2SA1162-G		
Q312	8-729-216-22	TRANSISTOR 2SA1162-G		
Q313	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q315	8-729-421-19	TRANSISTOR UN2213		
Q401	8-729-424-67	TRANSISTOR UN2216		
Q404	8-729-216-22	TRANSISTOR 2SA1162-G		
Q503	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q505	8-729-931-45	TRANSISTOR IRF614		
Q506	8-729-140-96	TRANSISTOR 2SD774-34		
Q507	8-729-216-22	TRANSISTOR 2SA1162-G		
Q509	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q511	8-729-048-07	TRANSISTOR 2SD2578-CA		
Q601	8-729-023-22	TRANSISTOR 2SD2114K		
Q602	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q603	8-729-424-08	TRANSISTOR UN2111		
Q604	8-729-200-17	TRANSISTOR 2SA1091-O		
Q605	8-729-044-30	TRANSISTOR 2SK2845-LB102		
Q606	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q606	8-729-120-28	TRANSISTOR 2SC1623-L5L6		
Q607	8-729-922-37	TRANSISTOR 2SD2144S-UVW		
Q608	8-729-230-49	TRANSISTOR 2SC2712-YG		
Q901	8-729-421-19	TRANSISTOR UN2213		
Q902	8-729-421-19	TRANSISTOR UN2213		
		<<RESISTOR>		
R001	1-414-233-22	INDUCTOR CHIP	0UH	
R002	1-216-025-91	RES,CHIP	100 5% 1/10W	
R003	1-216-295-91	SHORT	0	
R004	1-216-025-91	RES,CHIP	100 5% 1/10W	
R005	1-216-025-91	RES,CHIP	100 5% 1/10W	
R007	1-216-295-91	SHORT	0	
R008	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R010	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R011	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R012	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R013	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R014	1-216-025-91	RES,CHIP	100 5% 1/10W	
R015	1-216-025-91	RES,CHIP	100 5% 1/10W	
R017	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R018	1-216-033-00	RES,CHIP	220 5% 1/10W	
R019	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R021	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R022	1-216-033-00	RES,CHIP	220 5% 1/10W	
R024	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	
R025	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	
R026	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	
R027	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R029	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R031	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R035	1-216-025-91	RES,CHIP	100 5% 1/10W	
R036	1-216-025-91	RES,CHIP	100 5% 1/10W	
R037	1-216-025-91	RES,CHIP	100 5% 1/10W	
R040	1-216-025-91	RES,CHIP	100 5% 1/10W	
R041	1-216-025-91	RES,CHIP	100 5% 1/10W	
R042	1-216-295-91	SHORT	0	
R043	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R044	1-216-025-91	RES,CHIP	100 5% 1/10W	
R045	1-414-233-22	INDUCTOR CHIP	0UH	
R046	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R047	1-414-233-22	INDUCTOR CHIP	0UH	
R048	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R050	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R053	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R055	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R056	1-216-073-00	RES,CHIP	10K 5% 1/10W	

RM-952

A

REF. NO.	PART NO.	DESCRIPTION			REMARK
R061	1-216-033-00	RES,CHIP	220	5%	1/10W
R062	1-216-041-00	RES,CHIP	470	5%	1/10W
R063	1-216-037-00	RES,CHIP	330	5%	1/10W
R064	1-216-037-00	RES,CHIP	330	5%	1/10W
R065	1-216-037-00	RES,CHIP	330	5%	1/10W
R066	1-216-049-91	RES,CHIP	1K	5%	1/10W
R067	1-216-049-91	RES,CHIP	1K	5%	1/10W
R105	1-216-295-91	SHORT	0		
R109	1-216-041-00	RES,CHIP	470	5%	1/10W
R111	1-216-025-91	RES,CHIP	100	5%	1/10W
R112	1-216-025-91	RES,CHIP	100	5%	1/10W
R113	1-216-047-91	RES,CHIP	820	5%	1/10W
R202	1-216-071-00	RES,CHIP	8.2K	5%	1/10W
R203	1-216-077-00	RES,CHIP	15K	5%	1/10W
R204	1-216-071-00	RES,CHIP	8.2K	5%	1/10W
R208	1-216-073-00	RES,CHIP	10K	5%	1/10W
R210	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
R211	1-216-043-91	RES,CHIP	560	5%	1/10W
R212	1-216-033-00	RES,CHIP	220	5%	1/10W
R213	1-216-073-00	RES,CHIP	10K	5%	1/10W
R214	1-216-073-00	RES,CHIP	10K	5%	1/10W
R215	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R216	1-216-059-00	RES,CHIP	2.7K	5%	1/10W
R217	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R218	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R219	1-216-025-91	RES,CHIP	100	5%	1/10W
R220	1-216-025-91	RES,CHIP	100	5%	1/10W
R221	1-216-295-91	SHORT	0		
R225	1-216-033-00	RES,CHIP	220	5%	1/10W
R226	1-216-033-00	RES,CHIP	220	5%	1/10W
R227	1-216-033-00	RES,CHIP	220	5%	1/10W
R229	1-216-073-00	RES,CHIP	10K	5%	1/10W
R231	1-216-295-91	SHORT	0		
R234	1-249-389-11	CARBON	4.7	5%	1/4W
R235	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R236	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R237	1-216-308-00	RES,CHIP	4.7	5%	1/10W
R301	1-216-073-00	RES,CHIP	10K	5%	1/10W
R302	1-216-295-91	SHORT	0		
R303	1-216-049-91	RES,CHIP	1K	5%	1/10W
R304	1-216-073-00	RES,CHIP	10K	5%	1/10W
R305	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R306	1-216-073-00	RES,CHIP	10K	5%	1/10W
R308	1-216-025-91	RES,CHIP	100	5%	1/10W
R309	1-216-025-91	RES,CHIP	100	5%	1/10W
R310	1-216-025-91	RES,CHIP	100	5%	1/10W
R311	1-216-017-91	RES,CHIP	47	5%	1/10W
R312	1-216-041-00	RES,CHIP	470	5%	1/10W
R313	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R314	1-216-045-00	RES,CHIP	680	5%	1/10W
R316	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R317	1-216-077-00	RES,CHIP	15K	5%	1/10W
R318	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R319	1-216-025-91	RES,CHIP	100	5%	1/10W
R320	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R321	1-216-073-00	RES,CHIP	10K	5%	1/10W
R322	1-216-033-00	RES,CHIP	220	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION			REMARK
R331	1-216-295-91	SHORT	0		
R332	1-216-033-00	RES,CHIP	220	5%	1/10W
R333	1-216-073-00	RES,CHIP	10K	5%	1/10W
R334	1-216-129-00	RES,CHIP	2.2M	5%	1/10W
R335	1-216-045-00	RES,CHIP	680	5%	1/10W
R338	1-216-033-00	RES,CHIP	220	5%	1/10W
R340	1-216-025-91	RES,CHIP	100	5%	1/10W
R345	1-216-081-00	RES,CHIP	22K	5%	1/10W
R348	1-208-806-11	RES,CHIP	10K	0.50%	1/10W
R349	1-216-073-00	RES,CHIP	10K	5%	1/10W
R350	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R351	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R354	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R355	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R356	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R357	1-216-079-00	RES,CHIP	18K	5%	1/10W
R358	1-216-049-91	RES,CHIP	1K	5%	1/10W
R359	1-216-033-00	RES,CHIP	220	5%	1/10W
R360	1-216-033-00	RES,CHIP	220	5%	1/10W
R361	1-216-073-00	RES,CHIP	10K	5%	1/10W
R362	1-216-075-00	RES,CHIP	12K	5%	1/10W
R363	1-216-079-00	RES,CHIP	18K	5%	1/10W
R364	1-216-295-91	SHORT	0		
R365	1-216-033-00	RES,CHIP	220	5%	1/10W
R366	1-216-073-00	RES,CHIP	10K	5%	1/10W
R367	1-216-073-00	RES,CHIP	10K	5%	1/10W
R370	1-216-033-00	RES,CHIP	220	5%	1/10W
R375	1-216-025-91	RES,CHIP (KV-PF21P41 only)	100	5%	1/10W
R376	1-216-081-00	RES,CHIP	22K	5%	1/10W
R377	1-216-121-91	RES,CHIP	1M	5%	1/10W
R378	1-216-031-00	RES,CHIP	180	5%	1/10W
R404	1-216-073-00	RES,CHIP	10K	5%	1/10W
R405	1-216-049-91	RES,CHIP	1K	5%	1/10W
R406	1-216-073-00	RES,CHIP	10K	5%	1/10W
R408	1-216-049-91	RES,CHIP	1K	5%	1/10W
R411	1-216-113-00	RES,CHIP	470K	5%	1/10W
R412	1-216-041-00	RES,CHIP	470	5%	1/10W
R413	1-216-021-00	RES,CHIP	68	5%	1/10W
R414	1-216-113-00	RES,CHIP	470K	5%	1/10W
R417	1-216-077-00	RES,CHIP	15K	5%	1/10W
R418	1-216-113-00	RES,CHIP	470K	5%	1/10W
R419	1-216-022-00	RES,CHIP	75	5%	1/10W
R426	1-216-033-00	RES,CHIP	220	5%	1/10W
R505	1-216-099-00	RES,CHIP	120K	5%	1/10W
R506	1-216-085-00	RES,CHIP	33K	5%	1/10W
R507	1-249-389-11	CARBON	4.7	5%	1/4W F
R508	1-215-910-00	METAL OXIDE	68	5%	3W F
R509	1-215-911-11	METAL OXIDE	100	5%	3W F
R510	1-215-885-00	METAL OXIDE	68	5%	2W F
R511	1-215-911-11	METAL OXIDE	100	5%	3W F
R516	1-216-081-00	RES,CHIP	22K	5%	1/10W
R518	1-247-807-31	CARBON	100	5%	1/4W
R520	1-215-445-00	METAL	10K	1%	1/4W
R522	1-208-806-11	RES,CHIP	10K	0.50%	1/10W
R523	1-249-411-11	CARBON	330	5%	1/4W
R525	1-208-830-11	RES,CHIP	100K	0.50%	1/10W

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION			REMARK
R526	1-208-798-11	RES,CHIP	4.7K	0.50%	1/10W
R527	1-216-001-00	RES,CHIP	10	5%	1/10W
R528	1-208-814-91	RES,CHIP	22K	0.50%	1/10W
R529	1-208-766-11	RES,CHIP	220	0.50%	1/10W
R531	1-247-843-11	CARBON	3.3K	5%	1/4W
R533	1-249-417-11	CARBON	1K	5%	1/4W
R534	1-216-361-00	METAL OXIDE	0.22	5%	2W F
R535	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R536	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R537	1-208-814-91	RES,CHIP	22K	0.50%	1/10W
R540	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R541	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R542	1-216-295-91	SHORT	0		
R543	1-249-426-11	CARBON	5.6K	5%	1/4W F
R545	1-216-077-00	RES,CHIP	15K	5%	1/10W
R546	1-216-077-00	RES,CHIP	15K	5%	1/10W
R547	1-216-085-00	RES,CHIP	33K	5%	1/10W
R549	1-215-451-00	METAL	18K	1%	1/4W
R550	1-216-097-91	RES,CHIP	100K	5%	1/10W
R551	1-249-421-11	CARBON	2.2K	5%	1/4W
R552	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R553	1-215-457-00	METAL	33K	1%	1/4W
R554	1-215-457-00	METAL	33K	1%	1/4W
R556	1-215-437-00	METAL	4.7K	1%	1/4W
R558	1-249-421-11	CARBON	2.2K	5%	1/4W
R559	1-249-429-11	CARBON	10K	5%	1/4W
R560	1-216-073-00	RES,CHIP	10K	5%	1/10W
R562	1-249-401-11	CARBON	47	5%	1/4W
R565	1-216-073-00	RES,CHIP	10K	5%	1/10W
R567	1-216-105-91	RES,CHIP	220K	5%	1/10W
R568	1-249-383-11	CARBON	1.5	5%	1/4W F
R570	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R571	1-215-437-00	METAL	4.7K	1%	1/4W
R573	1-216-089-91	RES,CHIP	47K	5%	1/10W
R577	1-215-913-11	METAL OXIDE	220	5%	3W F
R578	1-216-369-00	METAL OXIDE	1	5%	2W F
R579	1-216-097-91	RES,CHIP	100K	5%	1/10W
R580	1-208-830-11	RES,CHIP	100K	0.50%	1/10W
R581	1-208-798-11	RES,CHIP	4.7K	0.50%	1/10W
R585	1-249-391-11	CARBON	6.8	5%	1/4W F
R588	1-215-888-00	METAL OXIDE	220	5%	2W F
R589	1-215-888-00	METAL OXIDE	220	5%	2W F
R590	1-215-465-00	METAL	68K	1%	1/4W
R591	1-260-288-11	CARBON	0.47	5%	1/2W F
R593	1-260-288-11	CARBON	0.47	5%	1/2W F
R594	1-260-288-11	CARBON	0.47	5%	1/2W F
R596	1-215-922-11	METAL OXIDE	6.8K	5%	3W F
R597	1-247-750-11	CARBON	680	5%	1/2W F
R598	1-249-438-11	CARBON	56K	5%	1/4W
R599	1-249-389-11	CARBON	4.7	5%	1/4W
R600	1-249-438-11	CARBON	56K	5%	1/4W
R601	1-249-418-11	CARBON	1.2K	5%	1/4W F
R602	1-249-389-11	CARBON	4.7	5%	1/4W F
R603	1-215-485-00	METAL	470K	1%	1/4W
R604	1-216-097-91	RES,CHIP	100K	5%	1/10W
R607	1-249-425-11	CARBON	4.7K	5%	1/4W
R608	1-240-205-91	CARBON	22M	5%	1/2W
R609	1-216-057-00	RES,CHIP	2.2K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION			REMARK
R610	1-216-073-00	RES,CHIP	10K	5%	1/10W
R611	1-216-089-91	RES,CHIP	47K	5%	1/10W
R612	1-216-045-00	RES,CHIP	680	5%	1/10W
R614	1-216-041-00	RES,CHIP	470	5%	1/10W
R615	1-216-350-11	METAL OXIDE	1.2	5%	1W F
R616	1-260-302-51	CARBON	6.8	5%	1/2W F
R617	1-247-791-91	CARBON	22	5%	1/4W
R619	1-260-128-11	CARBON	270K	5%	1/2W
R620	1-215-915-11	METAL OXIDE	470	5%	3W F
R622	1-215-908-00	METAL OXIDE	33	5%	3W F
R623	1-216-095-00	RES,CHIP	82K	5%	1/10W
R624	1-216-089-91	RES,CHIP	47K	5%	1/10W
R626	1-216-049-91	RES,CHIP	1K	5%	1/10W
R627	1-240-251-11	CMT,MELF	6.8	5%	10W
R629	1-247-747-11	CARBON	470	5%	1/2W F
R630	1-249-429-11	CARBON	10K	5%	1/4W F
R631	1-216-089-91	RES,CHIP	47K	5%	1/10W
R632	1-202-933-61	FUSIBLE	0.1	10%	1/2W F
R634	⚠ 1-218-265-11	METAL	8.2M	5%	1W
R635	1-216-492-11	METAL OXIDE	82K	5%	3W F
R636	1-215-924-00	METAL OXIDE	15K	5%	3W F
R637	1-216-492-11	METAL OXIDE	82K	5%	3W F
R639	1-216-363-00	METAL OXIDE	0.33	5%	2W F
R640	1-249-415-11	CARBON	680	5%	1/4W
R641	1-216-362-11	METAL OXIDE	0.27	5%	2W F
R642	1-249-419-11	CARBON	1.5K	5%	1/4W
R643	1-247-843-11	CARBON	3.3K	5%	1/4W
R644	1-249-419-11	CARBON	1.5K	5%	1/4W
R646	1-215-924-00	METAL OXIDE	15K	5%	3W F
R647	1-249-401-11	CARBON	47	5%	1/4W
R648	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R649	1-249-417-11	CARBON	1K	5%	1/4W
R650	1-215-882-00	METAL OXIDE	22	5%	2W F
R652	1-215-900-11	METAL OXIDE	22K	5%	2W F
R653	1-215-873-00	METAL OXIDE	4.7K	5%	1W F
R657	1-260-127-11	CARBON	220K	5%	1/2W
R659	1-216-049-91	RES,CHIP	1K	5%	1/10W
R660	1-216-073-00	RES,CHIP	10K	5%	1/10W
R661	1-215-873-00	METAL OXIDE	4.7K	5%	1W F
R901	1-249-411-11	CARBON	330	5%	1/4W
R903	1-216-022-00	RES,CHIP	75	5%	1/10W
R904	1-216-033-00	RES,CHIP	220	5%	1/10W
R905	1-216-113-00	RES,CHIP	470K	5%	1/10W
R906	1-216-077-00	RES,CHIP	15K	5%	1/10W
R909	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R910	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R911	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R912	1-216-041-00	RES,CHIP	470	5%	1/10W
R913	1-216-049-91	RES,CHIP	1K	5%	1/10W
R914	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R915	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R916	1-216-017-91	RES,CHIP	47	5%	1/10W
R917	1-216-041-00	RES,CHIP	470	5%	1/10W
R918	1-216-041-00	RES,CHIP	470	5%	1/10W

A **C3**

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

REF. NO.		PART NO.	DESCRIPTION			REMARK
			<<RELAY>			
RY601	⚠	1-755-266-11	RELAY, AC POWER			
			<<SWITCH>			
S502		1-572-707-11	SWITCH, LEVER			
S600	⚠	1-571-433-21	SWITCH, PUSH (AC POWER)			
S901		1-692-431-21	SWITCH, TACTILE			
S902		1-692-431-21	SWITCH, TACTILE			
S903		1-692-431-21	SWITCH, TACTILE			
S904		1-692-431-21	SWITCH, TACTILE			
S905		1-692-431-21	SWITCH, TACTILE			
S906		1-692-431-21	SWITCH, TACTILE			
S907		1-692-431-21	SWITCH, TACTILE			
			<<TRANSFORMER>			
T501		1-437-195-11	TRANSFORMER, HORIZONTAL DRIVE			
T503	⚠	1-453-293-11	TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) (Except KV-PF21M70(ME))			
T503	⚠	1-453-298-11	TRANSFORMER ASSY, FLYBACK (NX-1748//M3A4) (KV-PF21M70(ME))			
T601		1-424-682-11	TRANSFORMER, LINE FILTER			
T603	⚠	1-433-512-31	TRANSFORMER, CONVERTER (SRT)			
T604	⚠	1-431-852-11	TRANSFORMER, CONVERTER (SRT)			
			<<THERMISTOR>			
THP600		1-810-961-11	THERMISTOR, POSITIVE			
			<<TUNER>			
TU101		8-598-447-00	TUNER, FSS BTF-LG411 (Except KV-PF21M40/ PF21M70)			
TU101		8-598-449-10	TUNER, FSS BTF-LG433 (KV-PF21M40/PF21M70)			
			<<CRYSTAL>			
X001		1-579-125-11	VIBRATOR, CERAMIC			
X301		1-781-134-21	VIBRATOR, CRYSTAL			
X302		1-781-132-21	VIBRATOR, CRYSTAL (Except KV-PF21Q70)			

****

	*	A-1331-884-A	C3 BOARD, MOUNTED **********			
		7-682-948-01	SCREW +PSW 3X8			
			<<CAPACITOR>			
C701		1-162-114-00	CERAMIC	0.0047MF		2KV
C702		1-102-074-00	CERAMIC	0.001MF	10%	50V
C703		1-107-651-11	ELECT	4.7MF	20%	250V
C704		1-130-202-00	FILM	0.022MF	5%	400V
C706		1-104-664-11	ELECT	47MF	20%	16V
C708		1-102-114-00	CERAMIC	470PF	10%	50V
C709		1-102-114-00	CERAMIC	470PF	10%	50V
C710		1-102-114-00	CERAMIC	470PF	10%	50V
C712		1-102-116-00	CERAMIC	680PF	10%	50V
C713		1-102-116-00	CERAMIC	680PF	10%	50V
C714		1-102-116-00	CERAMIC	680PF	10%	50V
C716		1-126-933-11	ELECT	100MF	20%	16V
C717		1-101-880-00	CERAMIC	47PF	5%	50V
C736		1-102-114-00	CERAMIC	470PF	10%	50V
C737		1-102-114-00	CERAMIC	470PF	10%	50V
C746		1-102-114-00	CERAMIC	470PF	10%	50V
			<<CONNECTOR>			
CN701		1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			
CN702		1-695-915-11	TAB (CONTACT)			
CN703	*	1-564-509-11	PLUG, CONNECTOR 6P			
CN704		1-695-915-11	TAB (CONTACT)			
			<<DIODE>			
D701		8-719-911-19	DIODE 1SS119-25			
D702		8-719-911-19	DIODE 1SS119-25			
D703		8-719-911-19	DIODE 1SS119-25			
D707		8-719-911-19	DIODE 1SS119-25			
D708		8-719-911-19	DIODE 1SS119-25			
D709		8-719-911-19	DIODE 1SS119-25			
D710		8-719-911-19	DIODE 1SS119-25			
D711		8-719-911-19	DIODE 1SS119-25			
D712		8-719-911-19	DIODE 1SS119-25			
D713		8-719-911-19	DIODE 1SS119-25			
D714		8-719-911-19	DIODE 1SS119-25			
D715		8-719-911-19	DIODE 1SS119-25			
D716		8-719-911-19	DIODE 1SS119-25			
D717		8-719-121-26	DIODE RD9.1ESL2			
			<<JACK>			
J701	⚠	1-540-071-22	SOCKET, CRT			
			<<COIL>			
L701		1-410-667-31	INDUCTOR	22UH		
L710		1-408-613-31	INDUCTOR	68UH		
L711		1-408-613-31	INDUCTOR	68UH		
L712		1-408-613-31	INDUCTOR	68UH		
			<<TRANSISTOR>			
Q704		8-729-326-11	TRANSISTOR 2SC2611			
Q705		8-729-326-11	TRANSISTOR 2SC2611			
Q706		8-729-326-11	TRANSISTOR 2SC2611			
Q707		8-729-200-17	TRANSISTOR 2SA1091-O			
Q708		8-729-200-17	TRANSISTOR 2SA1091-O			
Q709		8-729-200-17	TRANSISTOR 2SA1091-O			
Q710		8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q711		8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q712		8-729-119-78	TRANSISTOR 2SC2785-HFE			

The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

C3 F V1

REF. NO.	PART NO.	DESCRIPTION				REMARK
		<<RESISTOR>				
R703	1-249-496-11	CARBON	100K	5%	1/2W	
R705	1-216-380-11	METAL OXIDE	8.2	5%	2W	F
R706	1-215-417-00	METAL	680	1%	1/4W	
R707	1-215-413-00	METAL	470	1%	1/4W	
R708	1-216-379-11	METAL OXIDE	6.8	5%	2W	F
R710	1-215-922-11	METAL OXIDE	6.8K	5%	3W	F
R711	1-247-752-11	CARBON	1K	5%	1/2W	
R712	1-215-922-11	METAL OXIDE	6.8K	5%	3W	F
R713	1-247-752-11	CARBON	1K	5%	1/2W	
R714	1-215-922-11	METAL OXIDE	6.8K	5%	3W	F
R715	1-247-752-11	CARBON	1K	5%	1/2W	
R719	1-215-480-00	METAL	300K	1%	1/4W	
R720	1-249-923-11	CARBON	1K	5%	1/4W	F
R721	1-215-489-00	METAL	680K	1%	1/4W	
R722	1-249-923-11	CARBON	1K	5%	1/4W	F
R723	1-215-479-00	METAL	270K	1%	1/4W	
R724	1-249-923-11	CARBON	1K	5%	1/4W	F
R725	1-249-421-11	CARBON	2.2K	5%	1/4W	
R726	1-249-421-11	CARBON	2.2K	5%	1/4W	
R727	1-249-421-11	CARBON	2.2K	5%	1/4W	
R728	1-249-407-11	CARBON	150	5%	1/4W	
R729	1-249-407-11	CARBON	150	5%	1/4W	
R730	1-249-407-11	CARBON	150	5%	1/4W	
R731	1-249-407-11	CARBON	150	5%	1/4W	
R732	1-249-407-11	CARBON	150	5%	1/4W	
R733	1-249-406-11	CARBON	120	5%	1/4W	
R734	1-247-739-11	CARBON	100	5%	1/2W	
R738	1-247-807-31	CARBON	100	5%	1/4W	
R739	1-247-807-31	CARBON	100	5%	1/4W	
R740	1-247-807-31	CARBON	100	5%	1/4W	
R755	1-249-418-11	CARBON	1.2K	5%	1/4W	
R756	1-249-418-11	CARBON	1.2K	5%	1/4W	
R757	1-249-418-11	CARBON	1.2K	5%	1/4W	
		<<VARIABLE RESISTOR>				
RV702	1-241-656-21	RES, ADJ, METAL FILM 110M				

****

*	A-1241-355-A	F BOARD, MOUNTED	
		**********	
	1-533-223-11	CLIP, FUSE	
*	4-374-846-01	COVER, CAPACITOR, CAP TYPE	
		<<CAPACITOR>	
C654	1-117-703-11	CERAMIC	0.0047MF 99% 250V
C4602 ⚠	1-104-708-91	FILM	0.47MF 20% 250V

REF. NO.	PART NO.	DESCRIPTION				REMARK
		<<CONNECTOR>				
CN4601 *	1-580-843-11	PIN, CONNECTOR (POWER)				
CN4602 *	1-580-843-11	PIN, CONNECTOR (POWER)				
CN4603	1-695-915-11	TAB (CONTACT)				
		<<FUSE>				
F4601 ⚠	1-532-237-11	FUSE, TIME-LAG (BET) 3.15A/250V				
		<<RESISTOR>				
R4601 ⚠	1-202-719-11	SOLID	1M	10%	1/2W	
		<<TRANSFORMER>				
T4601	1-424-682-91	TRANSFORMER, LINE FILTER (EXCEPT KV-PF21P10)				
T4602	1-424-682-91	TRANSFORMER, LINE FILTER (EXCEPT KV-PF21P10)				
T4601 ⚠	1-424-682-91	TRANSFORMER, LINE FILTER (KV-PF21P10)				
T4602 ⚠	1-424-682-91	TRANSFORMER, LINE FILTER (KV-PF21P10)				
		<<VARISTOR>				
VDR461	1-801-073-31	VARISTOR TNR14V471K660				

****

*	A-1347-155-A	V1 BOARD, COMPLETE (KV-PF21P41 only)			
		**********			
		<<CAPACITOR>			
C801	1-104-664-11	ELECT	47MF	20%	16V
C805	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C806	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C815	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C816	1-164-505-11	CERAMIC CHIP	2.2MF		16V
C817	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C818	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C820	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C821	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C822	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C823	1-126-933-11	ELECT	100MF	20%	16V
C826	1-126-963-11	ELECT	4.7MF	20%	50V
C829	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C830	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C831	1-126-933-11	ELECT	100MF	20%	16V
C832	1-126-964-11	ELECT	10MF	20%	50V
C835	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C837	1-126-933-11	ELECT	100MF	20%	16V

V1

REF. NO.		PART NO.	DESCRIPTION			REMARK
			<<CONNECTOR>			
CN801	*	1-774-812-11	CONNECTOR, BOARD TO BOARD 7P			
CN803	*	1-774-812-11	CONNECTOR, BOARD TO BOARD 7P			
			<<DIODE>			
D802		8-719-914-44	DIODE DAP202K			
D803		8-719-105-46	DIODE RD3.3M-B2			
D804		8-719-105-91	DIODE RD5.6M-B2			
D806		8-719-988-61	DIODE 1SS355TE-17			
D807		8-719-988-61	DIODE 1SS355TE-17			
			<<FERRITE BEAD>			
FB801		1-410-397-21	FERRITE	1.1UH		
FB802		1-410-397-21	FERRITE	1.1UH		
FB803		1-410-397-21	FERRITE	1.1UH		
FB804		1-410-682-31	INDUCTOR	470UH		
FB805		1-410-397-21	FERRITE	1.1UH		
			<<IC>			
IC801		8-759-476-87	IC SAA5261			
			<<CHIP CONDUCTOR>			
JR801		1-216-295-91	SHORT	0		
JR802		1-216-295-91	SHORT	0		
JR804		1-216-295-91	SHORT	0		
JR805		1-216-295-91	SHORT	0		
JR806		1-216-295-91	SHORT	0		
JR807		1-216-295-91	SHORT	0		
JR808		1-216-295-91	SHORT	0		
			<<TRANSISTOR>			
Q801		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q803		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q805		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q806		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q807		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q808		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q810		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q811		8-729-019-01	TRANSISTOR 2SD2394-EF			
Q812		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q813		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q814		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
Q817		8-729-900-53	TRANSISTOR DTC114EK			
Q818		8-729-120-28	TRANSISTOR 2SC1623-L5L6			
			<<RESISTOR>			
R800		1-208-806-11	RES,CHIP	10K	0.50%	1/10W
R801		1-216-295-91	SHORT	0		
R802		1-216-025-91	RES,CHIP	100	5%	1/10W
R803		1-216-295-91	SHORT	0		
R804		1-216-295-91	SHORT	0		
R805		1-216-295-91	SHORT	0		
R807		1-216-295-91	SHORT	0		
R813		1-216-295-91	SHORT	0		
R820		1-216-073-00	RES,CHIP	10K	5%	1/10W
R821		1-216-083-00	RES,CHIP	27K	5%	1/10W
R822		1-216-025-91	RES,CHIP	100	5%	1/10W
R824		1-216-295-91	SHORT	0		
R825		1-216-295-91	SHORT	0		
R827		1-216-295-91	SHORT	0		
R828		1-216-025-91	RES,CHIP	100	5%	1/10W
R829		1-216-025-91	RES,CHIP	100	5%	1/10W
R830		1-216-295-91	SHORT	0		
R831		1-216-295-91	SHORT	0		
R832		1-208-790-11	RES,CHIP	2.2K	0.50%	1/10W
R835		1-216-295-91	SHORT	0		
R839		1-216-655-11	RES,CHIP	1.5K	0.50%	1/10W
R841		1-216-025-91	RES,CHIP	100	5%	1/10W
R842		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R843		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R844		1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R845		1-216-049-91	RES,CHIP	1K	5%	1/10W
R846		1-216-049-91	RES,CHIP	1K	5%	1/10W
R847		1-216-049-91	RES,CHIP	1K	5%	1/10W
R848		1-216-049-91	RES,CHIP	1K	5%	1/10W
R849		1-216-049-91	RES,CHIP	1K	5%	1/10W
R850		1-216-105-91	RES,CHIP	220K	5%	1/10W
R851		1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R853		1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R857		1-216-081-00	RES,CHIP	22K	5%	1/10W
R858		1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R861		1-216-049-91	RES,CHIP	1K	5%	1/10W
R862		1-260-095-11	CARBON	470	5%	1/2W
R863		1-216-049-91	RES,CHIP	1K	5%	1/10W
R864		1-216-041-00	RES,CHIP	470	5%	1/10W
R866		1-215-880-00	METAL OXIDE	10	5%	2W F
R871		1-216-037-00	RES,CHIP	330	5%	1/10W
R879		1-216-073-00	RES,CHIP	10K	5%	1/10W
R880		1-216-041-00	RES,CHIP	470	5%	1/10W
R882		1-216-049-91	RES,CHIP	1K	5%	1/10W
R884		1-216-025-91	RES,CHIP	100	5%	1/10W
R888		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R889		1-216-073-00	RES,CHIP	10K	5%	1/10W
R890		1-216-081-00	RES,CHIP	22K	5%	1/10W
R894		1-216-073-00	RES,CHIP	10K	5%	1/10W
R895		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R896		1-216-073-00	RES,CHIP	10K	5%	1/10W
R897		1-216-073-00	RES,CHIP	10K	5%	1/10W
R898		1-216-065-91	RES,CHIP	4.7K	5%	1/10W
			<<CRYSTAL>			
X801		1-578-774-11	VIBRATOR, CRYSTAL			

****

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
		MISCELLANEOUS	
		**********	
	1-416-946-21	COIL, DEMAGNETIC	
	1-417-151-21	MATCHING TRANSFORMER, ANTENNA (Except KV-PF21P41)	
	1-452-032-00	MAGNET,DISC	
	1-452-094-00	CIRCULAR DISC MAGNET B	
	1-501-372-81	ANTENNA, TELESCOPIC (Except KV-PF21L70/PF21P41)	
	1-569-008-21	ADAPTOR, CONVERSION 2P (KV-PF21L70/PF21M70(ME)/PF21Q70 only)	
	1-505-740-11	SPEAKER (5X9CM)	
⚠	1-574-062-11	CORD, POWER (WITH CONNECTOR) 2.5A/250V (Exept KV-PF21P10)	
⚠	1-574-358-11	CORD, POWER (WITH CONNECTOR) 7.5A/250V (KV-PF21P10)	
	8-451-505-11	DEFLECTION YOKE (Y21RSA-S) (Exept KV-PF21P10)	
⚠	8-451-505-11	DEFLECTION YOKE (Y21RSA-S)(KV-PF21P10)	
	8-738-812-05	PICTURE TUBE (A51LPT70X) (KV-PF21M40/PF21P40/PF21P41)	
	8-738-809-05	PICTURE TUBE (A51LPT70X) (KV-PF21L70/PF21M70/PF21P10/PF21Q70)	

****

REF. NO.	PART NO.	DESCRIPTION	REMARK
		ACCESSORIES AND PACKING MATERIALS	
		**********	
	1-417-151-21	MATCHING TRANSFORMER, ANTENNA (Except KV-PF21P41)	
	1-501-372-81	ANTENNA, TELESCOPIC (Except KV-PF21L70/PF21P41)	
	1-569-008-21	ADAPTOR, CONVERSION 2P (KV-PF21L70/M70(ME)/PF21Q70 only)	
	3-701-910-00	SCREW, SPECIAL (DIA 3.8X20)	
	3-867-184-21	MANUAL,INSTRUCTION (KV-PF21M40/PF21P40/PF21P41)	
	3-867-184-31	MANUAL,INSTRUCTION (KV-PF21L70(ME)/PF21Q70)/M70(ME))	
	3-867-184-61	MANUAL,INSTRUCTION (KV-PF21M70(E))	
	3-867-184-41	MANUAL,INSTRUCTION (KV-PF21P10)	
*	4-070-297-01	CUSHION(UPPER)(ASSY)	
*	4-070-298-01	CUSHION(LOWER)(ASSY)	
	3-867-184-12	MANUAL, INSTRUCTION (KV-PF21M40/GE)	
*	4-070-299-01	INDIVIDUAL CARTON	
	4-392-003-11	BAND, HOLD	
	4-392-004-11	CLIP	
*	4-392-859-01	BAG, PROTECTION	
		REMOTE COMMANDER	
		**********	
	1-418-163-11	REMOTE COMMANDER (RM-952)	
	9-933-895-01	BATTERY COVER, REMOTE COMMANDER	

Sony Corporation
SONY TV Industries (M) Sdn. Bhd.
TV Business of General Area

9-965-749-01

English
99GM70226-1
Printed in Malaysia
© 1999. 7